THE

SOUTHERN AGRICULTURIST.

APRIL, 1833.

PART I.

ORIGINAL CORRESPONDENCE.

ART. XXIV.—*Result of an Experiment to ascertain the proper mode of preparing Rice Land; by* Q. E. D.

Dear Sir,—I have been for sometime desirous of writing you a few lines, communicating the result of an experiment I have made in rice-planting, but business and other circumstances have prevented my doing so. A rainy day, and the leisure consequent thereon, enables me now to make a statement, which, as it is the result of my own observation, will, I hope, be satisfactory to you.

On the 26th day of March, I planted four adjoining half acres in rice, each having been prepared in a different manner in order to ascertain if any thing was gained by turning the land, or whether the labour bestowed on this process was not work thrown away. The first half acre was turned as deep as the hoe could go down, and took me two prime workers to do it in a day; the second was left untouched, the stubble having been burnt off clean; the third was deeply turned between the rice rows as we say in the "alleys;" and the fourth was turned in the stubble row, (to use a plantation phrase) or in the row in which the rice of the preceding year grew. As the half acres all adjoined, in the same square, and were worked and watered in the same manner, under my own immediate

PAGINATION INCORRECT

direction, I cannot but hope that the result will go far to settle the question so often asked, "whether it is best to turn land preparatory to a rice-crop being planted." Several of your correspondents, particularly Col. Bryan, have expressed their opinions fully on this subject, and declare that it is best not to turn the land. The assertions of persons so well qualified to form opinions on rice-planting was satisfactory, but I determined to ascertain the facts for myself, and have done so. In light lands such as I plant, there is in my mind no question as to the proper course; the stubble ought to be burnt off and the land put under water until it is time to clean the ditches and plant the crop. Not only the quantity of rice will be greater, but the quality will be better. The consistency and firmness which the land retains, gives weight and hardness to the grain which light, loose lands never can bestow upon rice when dug and chopped. If the land be left untouched and unbroken, the rice-roots cannot wander so far in pursuit of nourishment, and the rice will not be so luxuriant; but the grain will be taken better care of and will gain what under other circumstances would have been thrown away upon the stalk and foliage.

Like men, plants enjoy the highest health, and can do most and best when "well fed," not when "over fed." He who partakes of the luxuries and delicacies of the table every day, becomes corpulent and eventually labours under obesity, but he seldom attains to strength and robust health. In clay soils I have reason to believe the opposite mode of preparing the land is best suited to the cultivation of rice. The tenacity of the inland swamps is so great, that the roots of the rice are unable to find their way through them in search of food, unless assisted by art; the plough, I believe, will add more to the product of these lands than any one imagines who has not experience on the subject. I wish, Mr. Editor, that some of your friends, who cultivate inlands successfully, would communicate to you their observations and the result of their practice.

But I had almost forgotten my own experiments which alone ought to have been given, as I did not propose to reason the matter with you, but merely to give the result.

The first half acre (this was dug and chopped) which required the work of three prime negroes, each one day

to prepare it for trenching; yielded twenty-five and a half bushels of rice, clean and well winnowed. The second half acre, (which was not touched) and of course, upon which no labour was expended, yielded twenty-nine bushels and three pecks of clean, well winnowed rice. The third half acre which was turned in the alley, and employed a negro one day, yielded twenty-seven bushels and two quarts of well winnowed rice. The fourth half acre which was dug in the stubble row, and required one hand to prepare it, gave me twenty-six bushels and three quarts of clean well winnowed rice. The rice was all weighed, but as it was done in the common steelyards, the result was by no means so accurate as could have been desired, yet it was decidedly in favour of the second half acre, and that dug in the alleys was the next best.

So far as I could determine by the steelyards, the first, weighed forty-four pounds; the second, forty-seven and a half pounds; the third, forty-six and upwards, and the fourth, forty-five and a little more. Thus you see, Mr. Editor, that both in quality and quantity, those half acres yielded most which were least worked preparatory to planting the crop. If the experiments had been on a larger scale, I should have sent them to mill, and had them beat separately, but no toll-mill would probably have taken the trouble to do so with the quanties resulting from my experiments.

Your well wisher,

Q. E. D.

ART. XXV.—*On the proper time for Harvesting Wheat, and the Culture of the Irish and Sweet Potato; by* A SMALL PLANTER.

"St. Matthew's Parish, June 1, 1832.

Dear Sir,—I see, in one of the late numbers of the Agriculturist, the French have lately discovered that the reaping of wheat previous to its being thoroughly ripe was very ad-

vantageous. Wheat when cut early, if managed right, is thereby greatly enhanced in value both in the straw and the flour. The grain is larger, heavier, fuller, and whiter, than when reaped at the usual time; the straw and chaff are also made more valuable; but this is no new discovery; it has been known, to the millers of Brandywine, for nearly half a century. I can remember when a boy of reading essays published by the proprietors of these mills, entreating the farmers not to let their wheat stand till ripe, but to reap it while there was some milk in the upper grains, illustrated with philosophical reasoning, sufficiently clear and convincing; and this was repeated for several seasons till the farmers, after testing it by experiments, generally fell into the measure, acquiesced with the millers, and to their credit and advantage, gave the preference to science and experiment over prejudice and habit. Hence the celebrity of Philadelphia flour, and hence the enhancement in the price of the wheat raised on the peninsular, between the Delaware and Chesapeake Bays, the farmers of which were the first who adopted the said method, and were of course the first who reaped the advantages. In this State, the proposition of harvesting wheat partially green, was at first treated with contemptuous laughter. I at length, however, prevailed on a couple of my friends in the upper country to venture on the experiment. But they and myself underwent much ridicule till the result manifested the efficacy of the the trial. The early cut wheat weighed mostly ten pounds more per bushel than that which was harvested eighteen days later, and the flour was equal to the best I had ever seen, whilst that of the last was but indifferent. This was in the year 1801, since which, the mode of harvesting early, has been gradually adopted, till it has now (as I am informed) become pretty common in most of the upper districts, and they experience the advantage; for flour of such wheat, manufactured at mills possessing machinery sufficient for cleansing the grain of all extraneous matter, is equal to any made in any other part of the world. The first wheat I cut in this parish weighed seventy pounds per bushel, my neighbours had none, I believe, that weighed sixty pounds. The flour of mine was equal in quality to any I had ever seen from Baltimore or Philadelphia, and that of those who harvest late was very common, although ground at the same mill.

Mine was cut more than two weeks earlier than any in the neighbourhood, and was of the sort called the white flint wheat.

Potatoes.—The best method of cultivating Irish potatoes that I know of, is to lay off the ground in beds as horizontally as possible, as though they were for sweet potato beds, plant in the alleys—manure with litter, such as rotten straw, shuck, or corn-stalks, cover about three inches, and as the plant grows up, draw earth to it from the beds, till they change from beds to alleys. I have planted in January, February and March, with nearly equal success. Though potatoes in appearance have no resemblance to corn, yet in one essential particular they are similar; that is, they both shoot upwards, and will grow together with the same culture, without any apparent detriment to each other. The corn to be planted at the same time, and in the same line with the potatoes; about four feet apart, one stalk in a place—that is, if the potatoes are planted as late as February, but if they are planted earlier, it will not answer, for the cold will be apt to kill the corn. It would in that case, be best to wait for the proper season, and plant the corn the same distance in chops, between the potatoes as they stand in drill.

The sweet potato is a most valuable esculent root, and seems naturally adapted to our climate and soil. As a crop it is made and gathered with more facility than any other, and with proper attention is very productive. As it grows downwards, it is most proper to plant on a hill, or on a bed: the latter is mostly the mode in this parish. The hill or bed ought to be drawn up, while the ground is wet, or it may chance not to get thoroughly moistened, the whole season. As to any thing more respecting the culture of this article, I will say nothing, as all my observations and experiments, have been anticipated, in your excellent journal, by pens far superior to mine, yet, this I will beg leave to add, that though sweet potatoes are easily raised they are hard to preserve. Mine rot in the banks more or less every year; the season before last I lost nineteen banks, which on examination proved to be rotten *en masse;* nor did the misfortune terminate there, for a quantity of these unsound potatoes, having been thrown to my cattle, in an adjoining cowpen, killed fifteen of the largest and stoutest cattle I had. The

strongest beat off the weakest: and it is well they did, for it is to that circumstance I am indebted for what remained of my stock uninjured. An unavoidable circumstance prevented my attending to the banking of the said potatoes as I usually had done, and not having a sufficiency of pine straw and dirt thrown on them, to guard them against the severity of winter, they became frozen and rotten. What havoc does not carelessness make of property? And most solemnly I admonish every Small Planter to have the following aphorism permanently imprinted on his mind, "Overlook your business with your own eyes, many are ruined by trusting to the care of others."

After wishing your journal an unprecedented portion of patronage and celebrity, and you genuine health, and every kind of good fortune, I conclude, by assuring you, that I am your humble servant,

A SMALL PLANTER.

ART. XXVI.—*Wood Collars for Horses and Iron Bows for Oxen; by* JOSEPH F. O'HEAR.

"Charleston, November 5, 1832.

Mr. Editor,—As many of your readers have not heard of wooden collars for oxen, mules and horses, I would suggest the great economy and advantage in the use of them. I have experienced their utility for ten or twelve years; they are superior to leather, corn-husk, or flag-collars in wet weather, because they do not gall the animal by holding to the hair. The simple mode adopted to make them is this: about four inches in diameter of dog-wood, sweet-gum, tupelo, or sassafras-wood is procured, with a *bend* to fit the animals neck, and just the length wanted, it is slit in half with a saw and forms the pair. Holes are then bored top and bottom for the strings, and a pair of hooks and staples are driven in about an inch below the middle, as in the common wooden haims. Observe to take off the bark and remove any knots or uneveness in

the wood, and turn the round part of the pole to the shoulder. The same collar can be used for the plough or cart, by attaching a piece of chain fifteen or sixteen inches long to the cart-shaft at the back-band-staple.

I have also used an iron-bow for oxen with which I am pleased. It is made from five-eighth rod iron. The advantage in its use is this, that a well shaped bow can be made to fit the animals neck, which will not gall, and is never out of order. It is a common thing to see oxen galled much, by the vile shaped wood-bow in common use, from the difficulty of bending the wood regularly; consequently the power of the ox is measurably lost. A pattern of the collar and of the bow may be seen at the blacksmith's shop of Mr. Jacob Martin, in Wentworth-street, one door west of Meeting-street, or at the *Cattle Farm*, at the forks of the road, near the city.

JOSEPH F. O'HEAR.

ART. XXVII.—*On the Culture of Rice between Corn; by* SOUTH-CAROLINA.

"July 10, 1832.

Dear Sir,—I have just got my July Number of the *Southern Agriculturist*, in which you request the planters generally to give you the result of any experiment made by them. I am of your opinion myself, that a planter ought to inform his friends of his experiments. As I see in my July Number, the Agricultural Society of St. Andrews, have been making a calculation to see whether more can not be made by planting corn than cotton. I am confident that more than four and a half acres can be planted to the hand, and manured so as to make them produce twenty-five bushels to the acre, and peas planted in them also—and the land that will not bring peas will bring rice.

In the year 1828, I planted a field in corn: that field had never brought a good crop of peas among the corn, but I think that if I had at this time the same field to manage, I

could make peas in it, for since that time I have found out the right time to plant peas among corn. I will write you on this subject at some other time.*

I will now return to the field that would not make peas. I thought I would plant rice in between the corn: the corn was planted five feet apart, and I planted the rice about a foot and a half, in between the corn-hills—the field contained about forty acres, but I did not plant more than twenty acres in rice. The rice was very fine and I made a fine crop out of it, but I cannot remember how much it made to the acre, for it was put away before it was dry enough, and I lost very nearly all of it. I am very sorry that I could not ascertain how much it would make to the acre. If I were ever to plant rice among corn again, I would plant up to the corn, and then I would have four feet of rice. I forgot to state above, that the rice was planted in April, and that the same work that made the corn made the rice.

If this can be of any advantage to you or any of your subscribers, I shall feel that I have done my duty as a friend to agriculture, and that I have done nothing more than what every planter ought to do, who is a friend to agriculture. I think the reason you do not have more pieces sent to you for publication, is, because a good many planters think that they cannot write a flowery piece that will please every body, but, Sir, if they all thought as I do, I think that you would never be at a loss for original pieces. But I suppose that every planter can write what he practices, and if they would do that, they would do as I am doing now.

If any person wishes to be informed how much rice will turn out, planted among corn, I think they will be informed by putting the query in the *Southern Agriculturist*, as I know that there is a planter in Prince William's Parish, that planted rice among his corn the last year.

Wishing you every success in your most excellect work, I remain your's, with esteem and respect,

SOUTH-CAROLINA.

* We will be happy to receive the communication.—*Ed. So. Agr.*

ART. XXVIII.—*Observations on the profit attending the Culture of the Grape; by* N. HERBEMONT.

"Columbia, November 3, 1832.

Dear Sir,—I have been a much longer time than I thought possible without, either writing to you personally or communicating to you any thing for the *Southern Agriculturist*. I am not, however, without some excuses for this apparent neglect, and among them, this, that I cannot find any subject to write upon that is likely to be interesting to your readers, and that I cannot write unless the "spirit moves me."

As to the culture of the vine and the making of wine, these subjects have been amply discussed in the former numbers of your most useful periodical. It does not appear to be a subject in which many in this State seem to take an interest, and *I have so long been preaching to an indifferent congregation*, that I fear doing more harm than good, to the good cause, by saying any more about it, yet some of my predictions on this subject are beginning to be realized; for a gentleman, about sixteen miles from this, (Mr. Abraham Geiger) has made this year about six thousand five hundred gallons of wine. My vineyard not being any thing as extensive as his, I made only nine hundred gallons. This, however, is very well from our sand-hills, which only produce, *in good years*, and with careful culture, about five bushels of corn per acre. The capability of this kind of land to produce good wine, and that in abundance, is proved beyond the reach of cavil, and, in spite of the sneers of such persons as can find nothing good that does not come from a great distance, and does not cost a great deal of money. Let the prices of our wines, however, be reduced to ever so low a rate, even that of vinegar, yet the culture and the production of it in land that cost from twelve and a half cents to one dollar per acre, and may produce, and does sometimes produce, as much as one thousand gallons per acre, must be an object of importance to this State, whose population is fast leaving it, and has not many other means of inducing it to remain. Our policy, it seems to me, most certainly is, not merely to do our utmost endeavours to retain our

See page 158—20 pages back
+18 pages ahead—

thin population within our limits; but also to encourage the settling of foreigners among us. What will become of us at last, is more than I can or am willing to predict, if we continue to disregard our natural advantages, when the policy of our neighbours, and the politics of too many amongst ourselves have a direct tendency to reduce, and does reduce us every day lower and lower. You will, probably, Sir, blame me for being thus querulous. I admit that I am rather so; but you must also admit, as I do, that I am on old man. I wonder if Cassandra would not have become somewhat querulous had she grown to be an old woman?

We have, however, five or six vineyards in a good state of progressiveness in this vicinity, some of them pretty extensive for beginnings, and I hope their future success and example will be of due avail to the patriotic cultivators of them and to the country; for it is never too late to do good, at least I hope so.

I am, very respectfully, dear Sir, your obedient servant,

N. HERBEMONT.

By Rev^d M^r Bachman.

ART. XXVII.—*Suggestions on the best mode of Rearing young Turkies; by* EXPERIMENTER.

America has given to the eastern continent several valuable animals and birds, which are preserved either in parks or in a domesticated state, and are prized either as objects of curiosity or as possessing a fine flavour, and adapted to the table of the epicure. Thus the American elk, *(Cervus Canadensis)* and the fallow deer, *(C. Virginianus)* are found, (particularly the latter) in several of the parks in Europe. The American wild pigeon, *(Columba Migratoria)* and the Virginia partridge, *(Perdix Virginiana)* are breeding in England. The Canada goose *(Anser Canadensis)* is becoming very common in France, and the turkey *(Meleagris Gallipavo)* which has been disseminat-

ed all over the world, is in its wild state a native of America alone.

On the subject of the origin of the domesticated turkey, there has been some dispute among naturalists. Some having asserted that it originally came from the East-Indies, and was from thence distributed all over Europe, and finally carried to America in its domesticated state. They have insisted, from the reports of travellers, who occasionally spoke of hunting the wild turkey among the jungles of India, that this bird still existed in a wild state in that country. I will offer a few arguments, which I conceive unanswerable, and which go to prove that the domesticated turkey all over the world is a descendant of the common wild turkey of our country.

1. The domesticated turkey was unknown until after the discovery of America. Among all the writers of antiquity, with which I am acquainted, I do not recollect ever reading of this bird before the days of Columbus. India was known at a much earlier period, and if this bird had existed there, it would at least have been mentioned by the ancients.

2. There are but two species of turkey that have been described by naturalists as existing in the world, and both of them are natives of North-America. Collections of bird-skins have been brought from India and Africa for centuries past and now abound in all the cabinets of Europe, and yet not a single specimen of the turkey has yet been exhibited there which did not originally come from America. That travellers or sportsmen who have visited the East-Indies, who are not often orinthologist, should, on seeing or killing a large bird bearing some resemblance to the turkey, set it down as one of that species, is not surprising. Several species of peacocks and large pheasants exist in the East, which, by common observers, might easily be believed a species of turkey; but it is acknowledged by all naturalists, that as yet India has produced no true turkey. If it ever had existed on the eastern continent, it would ere this have been discovered in a wild state. That it once existed and has been extirpated is quite improbable, as we do not know of any instance of this kind.

3. But the most decisive proof that we possess of the identity of the domesticated and the wild turkey is, that they have a similarity of form—they breed together, and

their offspring are not mongrels, as is always the case where two different species are paired; but are prolific, and a very common mode of improving our breed of turkies is, by taming the male of the wild species, and pairing him with the domesticated kind. I have known a friend who bred the wild turkey for several years, removed from the tame variety, and the brilliant gloss of the males disappeared in the third generation. I have also seen several wild turkies that were shot in the neighbourhood of plantations that had mingled with the tame turkies that had much white about them, and I have been credibly informed that several tame turkeys strayed away from a plantation in Orangeburgh district and became wild, and that for many years afterwards it was quite common to see wild turkeys of a variety of colours. The question, however, of the origin of our tame turkey is now so well settled among naturalists, that it is not necessary to multiply arguments on the subject. There is this advantage in knowing the origin of this, the most delicate flavoured of all birds, that by being assured that it exists in every portion of our wide extended country—from the snows of Canada to the tropics—the Atlantic coast to the Mississippi and Missouri countries beyond them, we will not be induced to believe it a species of poultry so inadapted to our climate as not to be worth the labour of rearing.

There is another species of wild turkey that has been brought from the Bay of Hondurus, *(Meleagris Ocellata)* with an ocellated tail like the peacock, and far more beautiful than our wild turkey. Until a few years past the existence of this bird was almost doubted, as but two specimes existed in the various museums in the world—one of them was in our Charleston museum. The individual that would undertake to domesticate this turkey would render some service to the community.

Wild turkeys are still occasionally found in the markets of Philadelphia, New-York and Boston, and before our country was so thickly settled, they were common in every portion of it. Where the wild turkey can exist, the tame turkey being the same species will undoubtedly thrive by judicious management. There is, therefore, no portion of the United States either too cold or too warm—too moist or too dry, to prevent the successful rearing of the turkey. The general want of success must be ascribed to other

causes, and principally to too much confinement and improper food.

I will now give for the benefit of the planters and farmers the little experience I have had on the rearing of this bird, and the result of experiments, I have requested my friends in several parts of the country to institute.

There is no difficulty in procuring turkey eggs. Let the hens be well fed and they will lay early and freely—they are faithful setters—so much so that some who have strayed away from the house and made their nests in retired situations, have been found dead on their addled eggs, and others continued setting during nearly the whole summer. It would be well to set several turkeys at the same time, giving each from twenty to twenty-five eggs. One hen can take care of twenty-five young ones, and in that case one or more of them can be turned out to lay a second time. Turkies are strictly polygamous—one male is sufficient for a dozen or fifteen hens, and you seldom find many clear eggs among this species of poultry.

The usual fault in the want of success in raising young turkies, appears to me to be the keeping them too much confined near the house—in having their coops made too small, in admitting too little air, and in giving them such food as they cannot obtain in their wild state, and is unsuited to them—in turning them out too early and exposing them to the dews, and above all, in over-driving them at such times when they are threatened with showers of rain.

The following is the mode which in early life I adopted and which I recommend to others.

As soon as your young turkies are hatched, take a walk over your plantation—carefully examine which part of it produces the greatest abundance of grasshoppers, crickets or any kind of insects; if it is far from the house so much the better. There on some dry situation, where the water will easily run off in heavy rains, place your your turkey-house. Let it have a tight roof—let it be large, say eight by ten feet—let the edges of the lower boards be sunk from six to nine inches into the earth, to keep out destructive animals—towards the top it may have a few railings, placed however so near each other as to render the house safe. The ground in the inside should be raised about six inches and covered with pine-trash or

straw, and a small ditch should be run around the building to drain off the water. Make a tight fence fifteen by twenty or twenty-five feet, and if possible, let there be some bark or straw covering over this place—this department is to be connected with the turkey-house, and in this place, your young turkeys must be retained in rainy days, and whilst the dews are on the ground. Here they must be fed early in the morning before they are turned out. Their food may be corn-grist, boiled Irish potatoes, or any soft food suited to young poultry. This may be given four times a day—but above all let them have such food as they feed on in their wild state; let them be gently driven about the grass-fields, and among the copses where they can obtain an abundance of their favourite food, such as worms, and a variety of insects that abound in those situations in the spring of the year. Should this kind of food become scarce, examine whether a situation can be found on the plantation that offers a greater quantity. Should this fail, mix a little animal food with their grist—chopped meat of any kind—the lights of animals—fish or any kind of animal food. This, however, will seldom be necessary where a proper selection of a situation has been made. It is customary to mix with the food of young turkies some chopped medicinal herbs such as fennel, rue, and more commonly the Jerusalem oak *(Chenopodium Anthelmenolicum.)* Without condemning this practice it may be observed that where young turkies have a good range they will of their own accord keep in health, by picking up such insects and grass, as are calculated to preserve them in health. Instead of hurrying them home when it threatens rain, as is usually the case, and which kills more of them than all diseases, they will at all times be so near to their place of shelter that they will escape both fatigue and rain.

When your turkies grow older let them have a wider range; and it will not injure them to be fed on grain of any kind.

It is quite important that your young turkies be well guarded. Let them have from the beginning, the care of some attentive servant—who, if possible, should have a temporary hut placed near the turkey-house—let him be attended by a good dog, who will keep off depredating animals, and give warning to thieves. When your tur-

kies are half grown they are out of danger, and may then be turned into the barn-yard and be made to sleep at home. In this way you may easily, and with very little expense, raise a flock from one hundred to three hundred turkies, with less care and mortification, than in the usual mode, where three-fourths of the brood perish before the end of the season.

There is in most cases something deleterious about farm-yards and old buildings to the health of young turkies. They are subject to a variety of diseases, some of them apparently contagious. Such as the gaps, warts, &c., all of which, may be avoided, by raising them a little distance from home. I have known at one season nearly all the young poultry that were kept about the house to die, and on being removed a few hundred yards from the house in the following season, scarcely one was diseased.

Let any one look at the young wild turkies as they are straying in the fields and woods, and he will find them all sleek, healthy and active. The same is the case where the domesticated turkies stray off and rear their brood from home, and they suffer only from the wild animals and from heavy rains, against which they are unable to guard on account of their possessing less sagacity than the wild turkey.

By the treatment I have laid down in this essay, I have generally been successful. Not having of late years possessed advantages in a city, I have suggested my plan to my friends among the planters. They inform me that they now succeed to admiration, and I have not heard of any who had faithful turkey minders, who did not after the trial of a season, give preference to this mode of raising this species of poultry.

I have made many attempts at raising turkies in yards and gardens in the city, and have not often been successful. I am satisfied there is more mortification and trouble than satisfaction or profit in the experiment.

I have seldom found young turkies treated agreeably to the plan proposed, that were subject to any other disease than what is usually called warts. The usual mode of removing these excrescenses, is by rubbing them with blue stone, and sometimes with gunpowder or tar. I am, however, under an impression, that this an internal disease. Having dissected many which were affected by it, I have

come to the conclusion, that the warts only become visible after the throat and stomach were considerably affected. I should prefer removing the diseased from the healthy poultry, as I have sometimes been disposed to think that this disease was contageous. A change of situation in the poultry—the giving them a new range will almost invariably effect a cure—give them fresh water—as the want of it has sometimes been stated as the origin of this disease. To this, you may add, the remedy of removing the warts by the blue stone. With regard to your breed of turkies, I would advise that you select the largest and finest, and those that are from one to three years old. The colour is not important, although I have preferred the dark coloured ones. There is a great advantage in changing the breed often. The finest breed of turkies I ever saw in Pennsylvania, were originally bought in the Charleston market—and the finest turkies I have seen in Carolina, were raised from a pair that were brought from Philadelphia. A lady of my acquaintance had preserved her breed of turkies on her plantation without changing them for many years, and they were so degenerated, that they were not much larger than fowls. By a mixture with a larger breed, and particularly with a domesticated bird from the wild species, her breed of turkies, in a short time, became the best in the State.

The above directions are very simple—I recommend them to the planters and farmers, that they may make at least one trial.

EXPERIMENTER.

PAGINATION INCORRECT

ART XXIII.—*Account of an Agricultural Excursion made into the South of Georgia in the winter of* 1832; *by the* EDITOR.

(Continued from page 147.)

From "*Sapello,*" we crossed to "*St. Simons' Island.*" The distance which has to be gone is estimated at from twelve to fifteen miles, the one is situated on the Northern, the other on the Southern branch of the Altamaha river. The intermediate space is occupied with marsh land, intersected with many creeks and branches of the river. Bordering on the sea, is a chain of small and unimportant islands, which chain is continued in front as far as the southern part of St. Simons. This island is not immediately on the ocean, but a few miles back, having a large body of marsh-land and these small islands in front, and an immense body of marsh-land and the river between it and the main-land.

We arrived late in the evening of the 6th Dec. at the residence of Mr. John Couper, Sen. situated at the extreme northern end of the island. It was with feelings of regret that we learned that Mr. Couper was absent, and would not return for several days. We regreted it, because we felt peculiarly desirous of becoming personally acquainted with one with whom we had frequently corresponded, and of whom we had formed an high opinion, which we were happy to find corroborated by the unanimous testimony of all we met with, who were personally acquainted with him—further than this, and the information we should have derived from personal intercourse with him, we had no cause of regret, for we received from his son-in-law, Capt. Frazier, and the other members of his family every attention we could desire. To Capt. Frazier, we feel particularly indebted for accompanying us around the island, pointing out to our notice such objects as were worthy, and furnishing us with every facility for attaining the object of our visit. Although the evening of the 6th had been very rainy, the next day proved extremely fine and accompanied by Capt. Frazier, we visited several plantations in the neighbourhood. Three subsequent days were devoted to the same object, and although we

See page 158-20 pages, 728 pages ahead.

were not able to examine all of the details of each, yet, we believe, we obtained information sufficient from those we did inspect, to give a correct idea of the island and the course of culture generally pursued.

This island is about twelve miles long, and on an average two miles wide. It was the head-quarters of Gen. Oglethorpe, on the settlement of Georgia, and the remains of the old town of Frederica are still to be seen. In 1791, the culture of cotton was first commenced by Major Pierce Butler, in which he was soon followed by Mr. James Spalding, Mr. John Couper and Mr. Hamilton. There are now fourteen cotton plantations on the island, which yield from five to six hundred bales annually. The soil is extremely light, and appears peculiarly adapted to the culture of cotton, and for sometime, we believe, that, that produced on this island, ranked among the best, if not as the very best. The recent improvements effected in the staple of the sea-island cottons grown in South-Carolina, by selection of seed and application of particular manures adapted to the plant, have given to those grown on some of the islands of this State a pre-eminence in the market, which is not likely soon to be surpassed. We saw, however, some cotton grown by Capt. Frazier, from selected seed, which clearly demonstrated that it was only necessary for the planters of this island to turn their attention to the subject and make use of tbe same means, to have their cotton again rank among the best.

The crops cultivated are cotton, corn, potatoes and sugar-cane, all, with the exception of the first, intended merely for the consumption of the respective plantations on which they are grown.

It cannot be expected of us that we shall give an account of each plantation we visited. This would be both tedious and uninteresting, inasmuch as the outlines of culture are the same in all neighbourhoods. The general course, therefore, need only be given, and the variations from it noticed. We prefer selecting a particular plantation from each section of country, for the purpose of presenting to our readers an account of the mode of culture there pursued, and then noticing such differences as exist on other plantations, and such other operations as we witnessed elsewhere. We have accordingly selected on St. Simons' Island, "*Hamilton*," belonging to

the estate of Hamilton, which is under the control and management of J. Hamilton Couper, Esq. whilst the immediate superintendance is committed to Capt. Bowers, who resides on the plantation, superintending and directing its operations.

"*Hamilton*" is situated on the western side of the island, and on the southern branch of the Altamaha river, three miles from St. Simon's sound. The quality of the soil is a grey sand, producing in its original state live-oak, bay, hickory and gum. The fields under present cultivation have been cleared upwards of thirty years. The crops now planted are cotton, cane, corn and potatoes, the former is the principal one for market—the cane only in small quantities, a little more than is necessary for the plantation use, (say, one-tenth of the crop,) in order to have the benefit of this crop on the plantation, and also, to insure some return from the labour expended on the place, which is best secured by a variety of crops.

Having more than a complete change of fields, cotton is never planted two years successively on the same field; but two-thirds of this crop is planted on land which has rested one year and been manured, and one-third on land which has rested two years. This last is not now manured, but is it in contemplation to make such arrangements as will ensure the manuring of the whole. The manure principally used is marsh-mud, which is got out during the whole year. A gang of twelve negroes, two full hands and two half, to each cart, with three ox-carts, are designated for that labour, and are thus employed wholely, not being removed to any other work, except the fields are very grassy. The time, however, which they lose by being transferred to other work is invariably made up by sending other hands to their assistance, whenever they can be spared—manure being considered as of primary importance. The mud is first carried out of the marsh, then placed into the cart, to which a man and a boy are attached, and carried at once into the field where it is spread: each ox-cart carries fourteen bushels, and this is the quantity allotted to two task rows of one hundred and five feet length:—one-quarter of an acre is manured per day by each cart.

In preparing for this crop, the fennel and other large weeds are chopped down and placed in the alleys, on

which the mud is spread. The listing generally takes place during the winter, and as early as possible. A short time previous to planting, the beds are formed by the plough running near the list, and throwing two furrows on each side, the hoes follow and mould the bed. The planting is commenced about the 12th of March. The seed with a small green tuft, is preferred and selected as far as practicable. The beds are formed at the distance of five feet apart, about four feet base, and eight or nine inches high; the tops are at least fourteen inches wide. In planting, the hand proceeds along the bed making a broad cut of nine inches, with the hoe, entirely across the bed, at the distance of every eighteen inches; the persons employed to drop the seed, (generally half hands) immediately follow and scatter the seed thinly in this opening made by the hoe;—a bushel of seed per acre, is considered sufficient. The *coverer* also immediately follows and finishes this operation, by covering the seed about one inch deep. As soon as any grass appears, a hoeing is given, whether the cotton be up or not. This, as well as all others, is done by hoeing obliquely towards the plant. As soon as the *forked* leaf appears the first thinning is given, when from four to six plants are left in each hole—if the weather be fine, fewer plants are left. The thinning is continued gradually, according to the growth of the plants until June, when a final one is given, leaving one plant in each spot, where the land is strong, and two where the land is light. From six to eight hoeings are given during the season, and this operation is continued until the pods commence opening, which is about the first of August. As soon as twenty or thirty pounds can be obtained per hand, a few are sent in, and the number is increased as the cotton opens more.—The hands are divided into several classes, according to their capacities, and a premium is awarded to the one of each class, who shall have picked in, the greatest quantity of cotton by Saturday night. No particular quantity is assigned, except the lowest rate, below which none must go, under a penalty. The premium has been found a sufficient stimulous to keep them far above this. The premiums consist ususually of molasses, rice, &c. After the cotton is picked, it is sunned the next day, on a scaffold, sufficiently to prevent its heating, and then

stowed away in the cotton-house. The cotton is sorted on rainy days and by invalids, and as soon as there is a sufficient quantity gathered, ginning commences. It is first sunned a little in order to prevent the seeds from being drawn between the rollers and crushed.

The gin is one of Eave's invention, much used on this island.* It is propelled by a large wheel working in the second story of the cotton-house; four horses are employed to propel one double gin, and six when two are required. The horses work below, and are attached to arms, in pairs. Each double gin, gins out from four to five hundred weight per day. The cotton is then passed through the whipper, and afterwards moted at the rate of thirty pounds per hand. All of the moting is is done in the loft which is large and well lighted. From thence the cotton is passed by means of a large wooden funnel about fourteen inches square, into a close room in the lower story, where it is kept until packed, excluded from the air. Here it remains but for a short time, as it is generally packed as soon as two bales are moted. The packing is done by means of a jack-screw, which is hung by hinges to a joist of the second story: a plat-form, about six and a half feet high, serves for receiving the cotton to be packed and fixing the bag, which is done in the manner usually adopted where the pestle is used. The packer having fixed his bag, throws in about fifty pounds, and jumping down, packs it with his feet, pressing it carefully all around, he then draws in about the same quantity and performs the same operation, after which another fifty pounds are thrown in and packed in the same way, making in all one hundred and fifty pounds. He now descends from the platform and places pieces of plank under the bag so as to support it, he then ascends to the top of the platform, places over the cotton a round piece, made of plank sufficiently large to cover the whole of the cotton, and on it several smaller pieces until they reach the head of the screw, when wound up. He then commences operations by turning the handles and soon forces the cotton down and packs it firm. He again descends from the platform and with a large stick or mallet, beats the out-

* Of this gin we shall give a more particular account hereafter.

side of the bag in every part, so as to make the whole smooth and even, after which he again places in cotton and packs with the screw, making four operations in all. From three hundred and twenty to three hundred and thirty pounds are usually packed in each four and a half yard bag. Two bags are packed by the operator with ease each day.

The quality of the cotton which we examined was certainly of very fine quality, and no doubt, as the seeds become more select, the staple will become finer. The use of marsh-mud has also tended to the improvement of the staple. Capt. Bowers is convinced that since the introduction of mud, as a manure for cotton, the staple has become much finer. The cotton plants are not generally topped, owing to their growth, not being more luxuriant than desired. If the plants show a tendency to grow very large, they are topped in August at the full moon, and the suckers removed as often as they appear.

The average product for several years has been one hundred and eighty pounds per acre; during this time two hundred and forty pounds have been made, and as small a quantity as one hundred and sixteen pounds.

Cane.—In the rotation adopted on this place, cane follows potatoes. For this crop (potatoes) the ground is well manured, and none is applied to the cane-crop, except the vines of the potatoes which are invariably buried. In February furrows are run with the plough five feet apart, and the cane is laid along in them, so that the ends lap about three or four inches, and is covered with the hoe. The first working is done by the cultivator, the second is effected by the same instrument, and followed by the hoe; after this, the crop receives two ploughings and an intermediate hoeing, during which operations a bed is formed round the cane. By the middle of July all of these are accomplished and the crop laid by. The harvesting usually commences about the 20th of November, and the average product has been about seven hundred pounds of dry sugar and forty gallons of molasses per acre. The product of one acre is usually allowed to plant seven acres, when the rows are single and five feet apart; and it takes eight full hands to plant an acre, including the ploughman, but not the carters. In harvesting one acre employs sixteen

hands as follows, four to *trash*,* four to cut the canes down, and eight to cart them in. The tops and trash are carted in for the use of the cattle, the first is excellent food, and the latter serves for litter to the pens.

The mill for grinding the cane is a common vertical one, with live-oak rollers twenty-two inches diameter with iron gudgeons, (wooden ones not answering,) such as has been described and figured several times in this journal. It is erected under an open circular shed forty feet diameter, and is turned by two horses attached to arms which are fixed to the centre roller:—it expresses at the rate of two gallons per minute. Two half hands and three, quarter hands, are employed to feed the mill and take away the trash, which is carried by the carts bringing in cane, to the cowpen, when they return, instead of going away empty. The juice expressed from the cane is carried through a leaden pipe and falls into a temporary receiver, from which it is handed up in buckets and emptied into two receivers, made of brick, lined with Roman cement and having wooden bottoms. This is contrary to the usual plan, which is, always to have the mill so elevated that the juice runs at once into a receiver, high enough to permit it to be drawn off as wanted into the boilers. Capt. Bowers is, however, of the opinion, that there is a saving of labour in this arrangement, as it is less laborious to bail up the juice than to carry the canes up to the mill when it is elevated.

The sugar-house is situated near by, is built of tabby, and has a very neat appearance, its length is fifty feet, and the width fifteen feet. This is found to be too narrow, and twenty feet width, would have been better. In its internal arrangement it is divided into but two rooms, one for boiling the syrup, and the other for curing the sugar. Four boilers are made use of, of the following capacities, viz. sixty, ninety, one hundred and twenty and one hundred and eighty gallons. The juice is clarified in the *receiver*, and from four to eight ounces of lime are used to every one hundred and twenty gallons of juice. The syrup is boiled up to from two hundred and thirty to two hundred and thirty-four degrees of Fahrenheit. The thermometer, however,

* Stripping off the leaves is called *trashing*, this is done as the cane stands in the field. The *cutter* follows who cuts the cane near the ground, and also the top at that part where the leaves easily separated from the cane, which is the criterion of its being mature.

is not always used at this place, but the eye principally relied on, and the syrup is thought to be boiled enough when the small bubbles are slow in passing off the ladle, and when the syrup will draw about one and a quarter inch without breaking, when taken between the thumb and finger. At this stage it is laded off into the coolers, where it is left to granulate: each of these is called a skip, and from ten to twelve skips of one hundred and twenty pounds of sugar are boiled each day. The coolers are made of brick with tabby floors, plastered, and are sufficiently large to contain several skips each. Six hands are employed in the sugar-house, and perform all of the operations. At nine o'clock they leave off work—the kettles are filled and the fires left burning—in the morning a moderate fire is kindled, and by the time the mill has expressed juice enough to fill the receiver, the syrup in the *teach* is sufficiently boiled, it is then laded off and the operations with the fresh juice commence. The mill, works but ten hours each day and is regularly whitewashed every night to check any acidity which might otherwise generate. The receivers are also whitewashed. The usual average strength of the cane-juice is from eight to nine degrees of Baumé Saccharometer—this year it had not reached beyond six degrees, and when we were there, but little of the cane had been manufactured, being left in the field to mature more, there not having been sufficient frost up to that time on the island, to injure the plants. The quality of the sugar manufactured here is very excellent indeed, and we believe it is the only plantation on the island where it is made for sale. Cotton, however, is the principal market crop, and but a small portion of cane, as we before observed, is planted. We have given in the above but a very imperfect account of the process of manufacturing sugar, but this subject will hereafter be treated of more in full.

Corn.—In preparing for this crop the land is broken up flush during the winter and laid off five feet square. If stable manure is used, it is placed in the spot where the furrows intersect each other, using a good shovel full for each hill: this is performed whilst the cart passes along with the manure, and four rows are done at a time. In planting, three hands work together, one mixes the manure and earth, another drops the corn, and the third covers it. As soon as the corn attains the height of six inches, the

plough is sent in. The first ploughing is done by running the plough near to the corn, throwing the earth from the plant. The cultivator next follows, which levels the ridge made by the plough, and in a great measure returns the earth into the furrow. Five ploughings and three hoeings are given, the three first ploughings are from the corn and followed by the cultivator, the two last are to the plants forming the bed. As soon as the tassels appear, the crop is laid by. The average product is twenty bushels per acre: fifteen acres are assigned to each plough, and the crop is gone over every ten days. Cow-peas are planted in chops between the corn about the 1st of July, and one working given, thus treated, they yield about five bushels per acre. Sometimes they are planted by themselves and then yield from fifteen to twenty bushels. The corn is harvested with the husk on, which is fed out to the cattle during the winter. The blades are all saved for fodder, and the stalks brought in, to litter the pens.

In our excursion we met with the *Arrow-root*, at several places, but in greater quantities here than elsewhere. The culture is simple, resembling very much that of the potato. Early in the spring, large beds, similar to those made for potatoes, are prepared, and the ends which are cut off at the time of manufacturing the roots, and the small tubers are planted six inches apart in single drills, and covered and cultivated exactly like the sweet potato. When the tops are killed by the frost, the tubers are dug and manufactured, but should it not be convenient to attend to them then, they are merely dug and buried in hills until wanted. Unless the weather is severe they may be left in the beds. We were at "*Hamilton*" on the 8th of December, at which time they were digging them in, and we saw none which were at all injured. The product we understand to be at the rate of one hundred bushels of roots per acre, and one bushel of these yield from two and a half to three pounds of the flour. This might appear to be a profitable business, but the manufacturing of the roots is extremely tedious; they have, each to be washed, pealed, and the ends cut off, then they must be reduced to a pulp by a grater, thrown into water and macerated to separate the fecula from the fibres. When this has been effected, the water is drawn off, while the fecula is still suspended;—the fibrous parts are carefully

squeezed and thrown away, after which, it is placed aside and suffered to deposit. When the water has become clear, it is drawn off and fresh water added, the whole is then stirred well together, and again left to settle. This is repeated several times for the purpose of removing all extraneous matter from the fecula, should this not be done frequently, it will have a dingy appearance, and its value in market be greatly diminished. The grater made use of by Capt. Bowers, we believe to be one of his own invention, and is quite simple. Two circular pieces of board, thirty-two inches in diameter,have tin graters eight inches wide nailed on their edges entirely around, so as to form one large wheel, the circumference of which is formed by these graters: through the centre passes a small piece of wood, to which is attached a handle to turn it by. This wheel is so fixed as to revolve in a trough of water placed below, into which all of the grated particles fall. Above this, is another small inclined trough, open at one end and terminating within a short distance of the grater. Into this the prepared roots are thrown and pressed forward by the hand towards the grater, while the wheel is made to revolve by another person who turns the handle. When the water contained in the lower trough becomes well saturated, it is drawn off, the fibrous matter squeezed and thrown away. It is then suffered to settle, the water removed and fresh added —this is repeated four times, after which it is spread out to dry, and great care is requisite to turn it often, and have it perfectly dry before it is packed away. The smaller roots and the ends which are cut off in preparing them for the grater, are used for seed: these are placed in hills and banked, in the same manner that potatoes for seed are. The quantity cultivated is but small, for it is not, on the whole, deemed profitable.

Grape vines to a small extent have been cultivated on this place, and the success attending the experiment, has induced Capt. Bowers to contemplate extending the culture. The last year, from the fourteenth part of an acre he made thirty-two gallons of wine, and this was not until after one half of the fruit, as he supposes, had been consumed. The grapes when gathered, were mashed, a bushel at a time, and then placed in a large tub to ferment,

from which the liquor was drawn off into a barrel, where it was permitted to ferment eight days longer, when one and a half gallons of brandy was added and the barrel bunged up, one pound of good Muscovado sugar being previously added to every gallon of *must*. We tasted some of the wine, the flavour was not agreeable, but this might be owing to its newness, and no doubt it will improve with age.

We were much pleased with the construction and arrangement of the negro houses, they are built on parallel rows, facing each other, and extending some distance, forming a wide avenue or street, which if we recollect aright, is planted throughout with trees. In the rear of the houses are the small gardens and hen houses of the occupants. The whole is situated near to the river, which at this spot, washes the island without there being any intervening marsh. The old buildings are of wood, but all of those recently erected, are of tabby, which adds much to the neatness of appearance, and to the comfort of the inmates. They are constructed by the plantation hands at leisure times, with but little expense of either time or labour; and when we consider the facility and ease with which they are built, we only wonder that, as the process has been known in the Southern States for nearly a century, every house on the sea-board has not been constructed of it. In the old town of Frederica, several of the houses were built of tabby, and the walls of many of them are still erect and in tolerable good preservation. So good were these walls found to be, that in erecting the light-house at the south-end of St. Simons, they were cut into blocks and used for that purpose. The whole building, we believe, is constructed of materials obtained from these walls.

Having given the culture of cotton at "*Hamilton*," we will add that at "*Hampton*," situated at the northern extremity of the island, and under the management of Mr. R. King, jun. as detailed to us at the time.

"As early as practicable the lands are listed, returning 'as much of the fallow growth as the land will bear; ma- 'nures of any kind may be put on after or before the 'listing, and bedded on immediately. I have used 'marsh-mud, compost, pond-earth, and stable manure, all 'of which are beneficial, but none equal to stable manure; 'its effects are immediately felt, the others remain longer

'in the soil and give a better return the second, than 'the first crop. In bedding, a plough is run along each 'side of the list, forming a rough bed, which is completed 'with the hoe, each hand doing from five-eighths to three-'quarters of an acre. About the 15th or 20th of March, I 'plant in gaps, twelve or fifteen inches apart. So soon as 'the plants begin to appear, I plant between the gaps, 'if the first is destroyed by winds or frost, I have a fresh 'supply of seed in the ground. So soon as the crop will 'bear the hoe, I commence hoeing, and when the plants 'are too thick, thin; and continue to pull out at each 'working, after the first hoeing, not allowing the plants to 'touch each other. There is some risk, apparently, in thin-'ning so early, but it is counterbalanced by the strength 'which the plants gain, which would not be the case if suffer-'ed to stand thick—each hand hoes, thins and picks out the 'grass from half an acre. When the forms appear generally, 'I put three or four women, who remove the wounded and 'unhealthy plants, and are governed with regard to distance, 'by the size of the plants at the time of thinning. These 'especial thinners continue to thin from the forming until 'the earliest pods are half grown, removing gradually as 'the plants advance in size. I then consider the crop as 'properly thinned, the number of stalks on a task row va-'rying from sixty to ninety.

"The first pickings are always laid by, for seed the next 'year; the middle crop, I think, is the best staple, being 'more perfect than the bottom or top. I cannot say much 'about selected seed, I have tried many and been satisfied 'with none, but would prefer the green tufted I change 'from the river-swamp and salt-marsh to the sea-island. 'About the last of June the largest cotton is laid by, but 'I continue to hoe the smaller growth later. Should the 'plants show a disposition to cast their fruit, hoeing, unless 'with great care, is injurious, it should be very lightly done. 'I hoe from five to seven times in the season, but never down. 'Each working is upwards to the bed to preserve its ori-'ginal size, and replace what has been removed by winds 'or rain—the beds are large, and rather flat. Should 'a crop become grassy after being laid by, it is better to 'let it remain so than to hoe. I have never found any 'remedy for the overgrowth of cotton. Topping large 'cotton early in September matures the top pods—some-

'times it has an evil tendency producing an under growth, 'particularly if done two early.

"In picking, each hand takes a task or separate line, 'and spreads his cotton on a sheet in the field, if the wea- 'ther is fine, it is sufficiently dried for putting away, if not, 'a few hours in the sun on a scaffo d is necessary. There 'are wire tables for the sorters, whose task is fifty pounds 'each. We use Eave's horse-gins and find it necessary after 'rainy weather to expose the cotton to the sun a short 'time before ginning. Much depends on the weather in 'ginning: from twenty to to thirty-five bushels of seed, or 'four hundred to seven hundred pounds are ginned per 'day. An elevator brings the cotton from under the gin 'on to tables of slats, where it is moted, each moter doing 'fifty pounds. As soon as possible after ginning, it is 'packed. I use the screw instead of the pestle in packing 'the staple. I make three qualities of cotton. The first 'quality is the finest and most perfect lobes, the second 'is short and tender, though fair; the third is the stained.

"The lands on this island are high sandy, second qua- 'lity hommoc and strong low grounds, the light hom- 'moc for some years past has been the most productive, 'the stronger lands inclining to blue or bush cotton. For 'seven or eight years past, the crops have been very irre- 'gular, varying from seventy-five to two hundred and fifty 'pounds per acre. Each hand cultivates five acres of cotton 'but no provisions, except a few potatoes and peas."

It will be observed that the screw is also used here for packing, being considered on several accounts more advantageous; the cotton is packed with as much, if not greater expedition, and the staple is less injured. It is a common iron one, such as is used for packing hay, and is fixed in a very simple manner;—two pieces, eight inches square pass from the floor of the second story through the loft, into these a cross-piece is morticed, through which the screw passes.

From what we witnessed, we strongly recommend the use of screws in lieu of pestles, for packing long staple cotton. The staple is less injured, more can be packed in a given time, and as much, if not a greater quantity got into a bag of the usual length.

(*To be continued.*)

PART II.

SELECTIONS

Art. XXIV.—*Vegetable Physiology.*

[FROM LINDLEY'S GUIDE TO THE ORCHARD AND KITCHEN GARDEN.]

[We do not believe, that we can offer to our readers a more excellent article than the following, being the Introduction to "*Lindley's Guide to the Orchard and Kitchen Garden,*" and written by Professor Lindley. A part of it was published in the last volume; we had not at that time received our copy of the work. On overlooking it, we thought the whole well worthy of being laid before our readers, but not wishing to have any repetition, we have delayed publishing it until now.]—*Ed. So. Agr.*

In all books upon gardening a great variety of modes of operating are comprehended, each of which has, it may be supposed, its own peculiar merit under particular circumstances. In several the very same mode is repeatedly recommended, with slight variations of phraseology, in speaking of many different subjects; and it has at last become a common complaint, among those who seek for information from books upon horticultural subjects, that they can find plenty of rules of action, but very few reasons.

No greater boon could be bestowed upon the gardening world than to deduce all horticultural operations to their first principles, and to lay bare the naked causes why in one case one mode of procedure is advisable, and another in another. But there are few persons who are competent to undertake this task; it requires a combination of physiological knowledge, with a perfect acquaintance with the common manipulation of the gardener's art, and much experience in all the little accidents which are scarcely appreciable by the most observing cultivator, with which the mere man of science can necessarily have no acquaintance, but upon which the success of a gardener's operations often mainly depends; which are to the cultivator signs as certain of the issue of his experiments, as to the mariner are the almost invisible changes in the appearances of the heavens by which the weather is prognosticated.

Deeply impressed with a persuasion of the justice of the foregoing observations, and sincerely regretting that there should be no present expectation of such a task being undertaken by any one fully competent to it, the Editor of this work ventures to throw himself upon the indulgence of the public in attemping, not to carry into effect such a plan himself, but to sketch out, in regard to the Fruit Garden, what he thinks the method should be upon which a more competent person would do well to proceed.

All our fruits, without exception, have been so much ameliorated by one circumstance or another, that they no longer bear any resemblance in respect of quality to their original. Who, for instance, would recognize the wild parent of the Coe's or Green Gage Plum in the savage Sloe, or that of the Ribston and Golden Pippin Apples in the worthless acid Crab? Or what resemblance can now be traced between the delicious Beurré Pears, whose flesh is so succulent, rich, and melting, and that hard, stony, astringent fruit, which even birds and animals refuse to eat? Yet these are undoubted cases of improvement resulting from time and skill patiently and constantly in action. The constant dropping of water will not more surely wear away the hardest stone, than will the reason of man in time compel all nature to become subservient to his wants or wishes. But it would be of little service to mankind that the quality of any fruit should be improved, unless we found some efficient and certain mode of multiplying the individuals when obtained. Hence there are two great considerations to which it is, above all things, necessary that the attention of the cultivator should be directed, viz. *Amelioration* and *Propagation*.

Amelioration consists either in acquiring new and improved varieties of fruit, or in increasing their good qualities when acquired. It will be as well to consider these two subjects separately.

By what means the first tendency to change their nature was given to domesticated plants, we are entirely ignorant. It is probable that it was originally due to accident, and also that it was still mere chance which continued to operate down to very moderate times. Philosophers are unacquainted with the reason why there should be any tendency to variation from the characters first stamped on any species by nature; but all know that this tendency does exist, and in a most remarkable degree in many species. There is in all beings a disposition to deviate from their original nature when cultivated, or even in a wild state; but this disposition is so strong in some as to render them particularly well adapted to become subject to domestication: for instance, the dog, the pigeon, and the barn-yard fowl, are cases

in which this tendency is most strongly marked in animals; and domesticated fruits are a parallel case in the vegetable world.

Without, then, vainly endeavouring to discover the first cause of this disposition to form varieties, let us take it as a naked fact that the disposition exists. Cultivators increase this disposition chiefly in two ways; either by constantly selecting the finest existing varieties for seed, or by intermixing the pollen and stigma of two varieties for the purpose of procuring something of an intermediate nature. The ancients are unacquainted with either of these practices, and consequently their gardens contained few things which would now be deemed worthy of cultivation. The power of obtaining cross-breed varieties at pleasure has only existed since the discovery of sexes in plants; but as it exerts a most extensive influence over alterations in the vegetable kingdom, it may be considered the most important controlling power that we possess.

In *sowing seeds* for the purpose of procuring improved varieties, care should be had, not only that the seeds be taken from the finest existing kinds; but also that the most handsome, the largest and most perfectly ripened specimens should be those that supply the seed. A seedling plant will always partake more or less of the character of its parent, the qualities of which are concentrated in the embryo when it has arrived at full maturity. How this concentration takes place, we are as ignorant as why certain constitutional peculiarities are in men transferred from father to son, and generation to generation; but we know that it does takes place. Now if the general qualities of a given variety are concentrated in the embryo under any circumstances, it is reasonable to suppose that they will be most especially concentrated in a seed taken from that part of a tree in which its peculiar good qualities reside in the highest degree. For instance, in the fruit of an apple growing upon the north wall there is a smaller formation of sugar than in the same variety growing on a south wall; and it can be easily understood that the seed of that fruit which is itself least capable of forming saccharine secretions, will acquire from its parent a less power of the same nature than if it had been formed within a fruit in which the saccharine principle was abundant. It should therefore be always an object with a gardener, in selecting a variety to become the parent of a new sort, to stimulate that variety by every means in his power to produce the largest and the most fully ripened fruit that it is capable of bearing. The importance of doing this is well known in regard to Melons and Cucumbers, and also in preserving fugitive varieties of flowers; but it is not generally practised in raising fruit trees.

The *power of procuring intermediate varieties* by the intermixture of the pollen and stigma of two different parents is,

however, that which most deserves consideration. We all know that hybrid plants are constantly produced in every garden, and that improvements of the most remarkable kind are yearly occurring in consequence. Experiments are, however, it may be supposed, sometimes made without the operator being exactly aware either of the precise nature of the action to which he is trusting for success, or of the limits within which his experiments should be confined.

Cross fertilization is effected, as every one knows, by the action of the pollen of one plant upon the stigma of another. The nature of this action is highly curious. Pollen consists of extremely minute hollow balls or bodies; their cavity is filled with fluid, in which swim particles of a figure varying from spherical to oblong, and having an apparently spontaneous motion. The stigma is composed of very lax tissue, the intercellular passages of which have a greater diameter than the moving particles of the pollen.

When a grain of pollen comes in contact with the stigma, it bursts and discharges its contents among the lax tissue upon which it has fallen. The moving particles descend through the tissue of the style, until one, or sometimes more, of them finds its way, by routes specially destined by nature for this service, into a little opening in the integuments of the ovulum or young seed. Once deposited there, the particle swells, increases gradually in size, separates into radicle and cotyledons, and finally becomes the embryo, — that part which is to give birth, when the seed is sown, to a new individual.

Such being the mode in which the pollen influences the stigma and subsequently the seed, a practical consequence of great importance necessarily follows, viz. that in all cases of cross fertilization the new variety will take chiefly after its polliniferous or male parent; and that at the same time it will acquire some of the constitutional peculiarities of the mother.* Thus, the male parent of the Downton Strawberry was the Old Black, the female a kind of Scarlet; in Coe's Golden Drop Plum, the father was the Yellow Magnum Bonum, the mother the Green Gage; and in the Elton Cherry the White Heart was the male parent, and the Graffion the female.

The limits within which experiments of this kind must be confined are, however, narrow. It seems that cross fertilization will not take place at all, or very rarely, between different species, unless these species are nearly related to each other; and that the offspring of the two distinct species is itself sterile, or if it

* In early crosses between distinct species this is particularly manifest; but in those varieties long domesticated it is less apparent, the distinctions between the parent themselves being less fixed, and less clearly marked.

possesses the power of multiplying itself by seed, its progeny returns back to the state of one or other of its parents. Hence it seldom or never has happened that domesticated fruits have had such an origin. We have no varieties raised between the Apple and the Pear, or the Quince and the latter, or the Plum and Cherry, or the Gooseberry and the Currant. On the other hand, new varieties obtained by the intermixture of two pre-existing varieties are not less prolific, but, on the contrary, often more so than either of their parents; witness the numerous sorts of Flemish Pears which have been raised by cross fertilization from bad bearers, within the last twenty years, and which are the most prolific fruit trees with which gardeners are acquainted; witness also Mr. Knight's Cherries, raised between the May Duke and the Graffion, and the Coe's Plum already mentioned.

It is, therefore, to the intermixture of the most valuable existing varieties of fruit that gardeners should trust for the amelioration of their stock. By this operation the pears that are in eating in the spring have been rendered as delicious and as fertile as those of the autumn; and there is no apparent reason why those very early, but worthless sorts, such as the Muscat Robert, which usher in the season of Pears, should not be brought to a similar state of perfection.

There is no kind of fruit, however delicious, that may not be deteriorated, or however worthless, that may not be ameliorated, by particular modes of management; so that after a given variety shall have been created, its merits may still be either elicited or destroyed by the cultivator. In this place those practices only need be considered that tend to improvement.

Some fruits of excellent quality are bad bearers: this defect is remedied by a variety of different methods, such as, 1. *By ringing the bark;* 2. *By bending branches downwards;* 3. *By training;* and, 4. *By the use of different kinds of stocks.* All these practices are intended to produce exactly the same effect by different ways. Physiologists know that whatever tends to cause a rapid diffusion of the sap and secretions of any plant, causes also the formation of leaf buds instead of flower buds; and that whatever, on the contrary, tends to cause an accumulation of sap and secretions, has the effect of producing flower buds in abundance. This circumstance, which at first sight seems to be difficult to account for physiologically, is no doubt to be explained by the difference between leaf buds and flower buds themselves. In a leaf bud, all the appendages or leaves are in a high state of developement, and the central part or axis, around which they are arranged, has a tendency to extend itself in the form of a branch as soon as the necessary stimulus has been communicated to the system by the light and warmth of spring. In a flower bud, the appendages or leaves are in that imperfectly formed, contracted state, which we name calyx, corolla, stamens, and

pistilla; and the central part around which they are arranged has itself no tendency to elongate under the influence of the usual stimulants. Hence, a flower bud, or flower, is nothing but a contracted branch; as is proved by the occasional elongation of the axis in flowers that expand during unusually hot damp weather late in the spring, becoming branches, bearing sepals and petals instead of leaves. It is, therefore, easily to be understood why, so long as all the motions in the fluids and secretions of a tree go on rapidly, with vigour, and without interruption, only rudiments of branches (or leaf buds) should be formed; and why, on the other hand, when the former become languid, and the parts are formed slowly, bodies of a contracted nature, with no disposition to extension, (or flower buds,) should appear.

It will be found that the success of the practices above enumerated, to which the gardener has recourse in order to increase the fertility of his fruit trees, is to be explained by what has just been said. In *ringing* fruit trees, a cylinder of bark is cut from the branch, by which means the return of the elaborated juices from the leaves down the bark is cut off, and all that would have been expended below the annular incision is confined to the branch above it. This produces an accumulation of proper juice; and the flower buds, or fertility, are the result. But there is a defect in this practice, to which want of success in many cases is no doubt to be attributed. Although the returning fluid is found to accumulate above the annular incission, yet the ascending sap flows along the alburnum into the buds with nearly as much rapidity as ever, so that the accumulation is but imperfectly produced. On this account the second practice, of *bending branches downwards*, is found to be attended with more certain consequences. The effect of turning the branches of a tree from their natural position to a pendulous or a horizontal one is, to impede both the ascent and the descent of the fluids in a gradual but certain manner. The tissue of which branches are composed is certainly permeable to fluids in every direction; and there can be no doubt that the vital action of the vessels of a plant is performed both in the natural and in an inverted position. So long as that erect direction of the branches which is natural to them is exactly maintained, the flow of their fluids, being subject to no interruption, will take place in the freest possible manner; but the moment this natural direction is deviated from, the vessels become more or less compressed, their action is impeded, and finally, if the inversion is perfect, it becomes so slow that an accumulation of the proper juices necessarily take place through every part of the system.

One of the objects of *training* is to produce the same effect. Branches are bent more or less from their naturally erect position; their motion, in consequence of the action of winds upon them, which is known to facilitate the movement of the fluids, is

totally destroyed; and hence arises the accumulation of proper juice which is necessary to their fertility. Nor is the *influence of the stock* of an essentially different nature. In proportion as the scion and the stock approach each other closely in constitution, the less effect is produced by the latter; and, on the contrary, in proportion to the constitutional difference between the stock and the scion, is the effect of the former important. Thus, when Pears are grafted or budded on the wild species, Apples upon Crabs, Plums upon Plums, and Peaches upon Peaches or Almonds, the scion is, in regard to fertility, exactly in the same state as if it had not been grafted at all. While, on the other hand, a great increase of fertility is the result of grafting Pears upon Quinces, Peaches upon Plums, Apples upon Whitethorn, and the like. In these latter cases, the food absorbed from the earth by the root of the stock is communicated slowly and unwillingly to the scion; under no circumstance is the communication between the one and the other as free and perfect as if their natures had been more nearly the same, the sap is impeded in its ascent, and the proper juices are impeded in their descent, whence arises that accumulation of secretion which is sure to be attended by increased fertility. No other influence than this can be exercised by the scion upon the stock. Those who fancy that the contrary takes place; that the Quince, for instance, communicates some portion of its austerity to the Pear, can scarcely have considered the question physiologically, or they would have seen that the whole of the food communicated from the alburnum of the Quince to that of the Pear is in nearly the same state as when it entered the roots of the former. Whatever elaboration it undergoes must necessarily take place in the foliage of the Pear; where, far from the influence of the Quince, secretions natural to the variety go on with no more interruption than if the Quince formed no part of the system of the individual.

If we consider upon what principle the *flavour upon particular fruits may be improved*, we shall find that it is entirely due to the increased action of the vital functions of leaves. When the sap is first communicated by the stem to the leaves, it has experienced but few chemical changes since it first entered the roots. Such changes as it has undergone have been due rather to the solution of some of the pre-existing peculiar secretions of the individual by the sap in its way upwards through the alburnum, than to any other cause. As soon, however, as it enter the leaves, it becomes altered in a variety of ways, by the combined action of air, and light, and evaporation; for which purposes the leaf is admirably adapted by its anatomical structure. Thus altered in the leaves, it ceases to be what we call sap, but becomes the proper juice; or, in other words, acquires the peculiar character of the fina secretions of the individual from which it is formed. Discharg-

ed by the leaves into the bark, it is thence conveyed by myriads of channels of cellular substance throughout the whole system. From these secretions, of whatever nature they may be, the fruit has the power of attracting such portions as are necessary for its maturation. Hence it follows, that the more we can increase the peculiar secretions of a plant, the higher will become the quality of its fruit; and that, on the other hand, the less the plant is in condition to form those secretions, the less will be the quality of the fruit. It is for the purpose of producing the former effect that pruning and training trees are more especially destined. In pruning, we remove all those superfluous branches which overshadowed the remainder, and we endeavour to expose every part to the freest action of light and air. In training, the same thing takes place, but is increased; there is not a branch that is not fully exposed to the most direct rays of light, and to the freest circulation of air, and even to the unimpeded action of the sun in aspects exposed to the south, east, or west. This action is obviously most powerfully on the south, and hence the higher quality of fruits matured upon that exposure than on any other; while, on the other hand, fruit raised upon a northern aspect are well known to be less highly flavoured than those from even an open standard. For a similar reason, forced fruits, which are obtained at a period when there is little light, cannot be compared with those which are matured in the full blaze of a summer sun; and hence melons grown in frames covered with mats, and carefully excluded from the influence of that solar light which is indispensable to them, have, whatever may be their external beauty, none of that luscious flavour which the melon, when well cultivated, possesses in so eminent a degree.

(*To be continued.*)

Art. XXV.—*Cultivation of Bees.*

[FROM THE GENESEE FARMER.]

As I have lately undertaken the cultivation of these useful insects, and having succeeded fully to my expectations upon the plan that I have adopted, I think that a few hints on the subject, drawn from my own experience, may not be unprofitable. I obtained last winter, Dr. Smith's little Treatise on Bees, and was so well pleased with his observations, that I determined at once to enter upon their cultivation. Accordingly, I obtained two good

hives early in March, and removed them into the garrets of two separate buildings. One into a three story brick store in the compact part of the town fronting the north, and the other into my dwelling house, situated in the more scattered and open situation, and fronting the east. As I have managed them rather differently, I will relate the history of each; and, as I conceive, in order to fully understand the matter, the failures, and the reasons of them, should be related, as well as the successful part of the experiment. In my commencement I had *one* failure, and it was caused by the neglect of laying down one simple fact in the treatises I have read; for all that I have heard on the subject, I have never learned that *bees will not fly in the dark.*

I have assumed the *garret* plan as the best; that is housing the bees in the highest part of the dwelling or out-house. The advantages of this plan over any other, I conceive to be these:

They are thus kept perfectly dry, comfortable and healthy.

They are out of the way of disturbance from the family and other annoyances, which often interrupt their labours. Mine have so far been uniformly good natured, having as yet never stung any of the family.

They are more convenient to approach, either to obtain their honey or for inspection.

I have adopted the plan for keeping them in a large box or hive, rather than that of letting them go at large in the garret, as having them under the better control than if they were in the open room. Now for the history of the swarm in the brick building:

I made a gallows, by nailing some strips of boards on the rafters, across which I laid a wide board. This was placed about four feet from a large door, through which were bored half a dozen holes of $1\frac{1}{4}$ inches diameter. The room, of course, was quite dark, no light coming in except from these holes. I set the hive, one of the common wooden kind, on this board, leaving a space sufficient for them to light upon in the front of the hive, very simply supposing they could fly well enough from the door back and forth to the hive inside. In a short time, as the warm weather commenced, the bees came out in great numbers and played around the door in the air. But in a few days they disappeared, and as they ceased to fly at all during the succeeding fine weather, I was led to examine the hive. It was almost empty of inhabitants, not more than a gill of bees being scattered among the comb, in which was several pounds of honey. I soon found out that, although the bees could find their way *from* the hive through the door into the air, yet, for want of a conductor, they could not find their way back again to the hive. Of course, in this adventure, I was bankrupt. But I purchased another hive and commenced again.

I then altered my gallows, and removed it close to the door, and laid a board across it which came up snug to the door directly at the lower edge of the holes. By this operation, the bees could walk directly from their hive to the open air and take wing. I then placed the hive about fifteen inches back from the door. The hive was very populous and lively. They immediately went to work, and as the season progressed, greatly increased in numbers. The hive was soon filled to overflowing; but as the room was entirely dark, they showed no disposition to swarm, but commenced building comb on the outside of the hive. I then took the hive that had failed, cleaned it of the comb, and set in the rear of the inhabited hive, as near as it could be placed, and raised them both on little blocks about half an inch high, so that the bees could have free access to both. They immediately commenced operations in the empty hive, and in a very few days made several piers of beautiful white comb, and stored it with honey. They still had no disposition to swarm, and increasing so rapidly in numbers that I feared they would be unmanageable, I determined to alter my plan and get them in a box. I accordingly made one six feet long, one foot high, and one foot wide, with two partitions inside, making three rooms, with communications from one to the other. (See description of the first hive.) These rooms hold upwards of a bushel each. Through the top in each room is a hole three inches in diameter, to communicate with other hives which may be set on the top. This large new hive I placed on a new gallows below the old ones, about a foot from the door, through which I bored a new set of holes, seven in number, and laid a smooth plained board between the bottom board of the hive and the door, so that nothing should interrupt their passage. Now, to remove the hive with such an enormous quantity of bees, and so heavy with honey, was no small labour. But it must be done. I obtained the assistance of an experienced bee-keeper, in the common way, to assist me, and with the aid of thick gloves, and binding up our faces, we commenced the work. It was about the middle of a hot day in July, and the bees were out all over the hives and board. We first took the spare hive, which they had partially filled, and placed it over the room at one end of the new one. We then, with great caution, removed the board on which the remaining one stood to the new hive, and placing one end of it on the top, lifted the old hive carefully on the centre of the box, and placed it over the hole in the top. We were slightly stung in the operation, but the bees, after being properly placed, soon become settled. We then left them, and the next day, with some common lime mortar and a trowel, I plastered all around the base of the old hive, so that no avenue of escape was open except through the new one. The other hive that had been partially filled, I closed in the same manner.

I now had two old hives placed over two of the rooms in the new one; all one family, with open communication to each part. The entrance from the door was common to each room. The hole through the top of the vacant room was covered with a board lid made for that purpose. The bees still kept at work with great industry, increasing enormously. I think it was the most numerous hive I ever saw. In less than a month, the main apartment under the old hive was completely filled down with comb and honey, being in quantity upward of a bushel. They still kept at work in the other hive, but towards fall entirely quit it, and went with the others to the main establishment. About the beginning of October, I took off the spare hive. It was entirely free from bees, and had almost thirty pounds of the finest white honey. Finer I never saw. As the bottom board to the large new hive was hung on the back side with butts, and held up by iron hooks and staples in front, I could let it down at any time, and see the progress they made. The bees are so numerous, that in order to make sure of preserving them through the winter, I have left the old hive upon the other for this winter, and shall not remove it till next summer, when I intend to drive the bees all into the large one. The quantity of bees is now so great that they cannot all get into the old one, although it will hold a bushel. I calculate that there are equal to three good swarms in it.

My plan of operation now is, to keep the large hive as the main establishment for the dwelling, habitation and breeding place of the bees; being capable of holding about six ordinary swarms. Every year I can place hives or boxes over the separate apartments, in which can be taken fifty or sixty pounds of honey each. So long as the bees have room to labour, they will not be apt to swarm, and if they increase beyond the capacity of this large hive, I can put them into a still larger one.

Operation of the Second Hive.—This was placed in the garret of my house near a glass window. The room was of course light. While the weather was cold, it was all well; but the first warm day, the bees issued out quite free; as the sun shone through the glass, they buzzed against it in great quantities, and not being able to get out, instead of going back to the hive, the stupid things staid about the window, and in the course of a day or two when I went to visit them, found full a quart of them dead on the floor. So much for not knowing enough to keep glass windows out of a bee-house. I now took out the sash, and closed up three-fourths of the window with tight boards, leaving plenty of room at the bottom for their entrance to the hive. I made a kind of gallows like the one before described, and set the hive upon it, placing a board from the hive to the window-sill to facilitate their passage out and in, a distance about two feet. This hive was a small one when I obtained it, and

PAGINATION INCORRECT

was now reduced by losses to about half its original numbers. As summer came on they began to increase, and to carry in bee bread and honey to the hive. In short, they were, although small, a thriving industrious community. They increased rapidly, so much so, that I immediately constructed a large new hive, on the Charlieshope plan, invented by Mrs. Griffith of New-Jersey, a description of which is given below. This hive, as before mentioned, was a large one, being on an average fifteen inches square, and twenty inches high, capable of holding about ten pecks of grain. The old hive, probably, held about three pecks. This new hive was made very stout, put together with screws, and the joints perfectly snug. Having all things ready, about the middle of June, at night, when the bees were all still, I carefully raised the old hive from its place and set it aside. I then *hung* the new hive on the gallows *on* which the old one *had stood*. This *hanging* I will explain in describing the hive. I had previously bored three holes of one and a half inches in diameter, near together on a line in about the centre of the top of the new hive, so that they could enter it from the old. When the new hive was well placed and every thing right about it, I removed the old one back on to the top of it, which, being so much broader than the old one, made a fine lighting board for the bees. Before I placed back the old hive, I examined and found it very full of inhabitants, and thoroughly filled with comb. I then left them for a few days to get acquainted with their newly intended habitation.

The bees next day went to work as usual, paying no sort of attention to the new hive, other than using the top as a lighting board to enter the old one upon; and I doubt whether they ever would have noticed it if I had not obliged them to do it. Fearing that they would swarm, as they had increased to great numbers, I completely stopped up the old hive with mortar, and compelled them to go down through the new one. This operation, however, they disliked exceedingly. Although they passed out of the old hive down through the new one, they would, on returning, all fly up to the old lighting place at the top of the new hive, where they assembled in immense numbers, running about uneasy and discontented. After running about awhile, they would fly off again to the window, and then buzzing about a little, again alight at the old place, and pursue the same course as before. They began, however, before long to discover the entrance at the bottom of the new hive, when, as evening approached, they would all enter; but it was evident that they were dissatisfied and perplexed at the change, and performed much less labour than before. The room was still quite light, and the window was open for some distance above the bottom of the new hive, although a smooth board was laid from the window-sill to

the entrance. I confess I was at a loss what to do; but it soon occurred to me to shut up all the windows but a small space at the bottom. I now did this by nailing a well jointed board across it, leaving only a space above the sill about four inches high. This aperture, although it still left the room partially light, answered every purpose. The bees now, instead of flying directly through the space in the window to the entrance of the old hive as before, although it was noonday when I did it, alighted on the window-sill, and followed the board placed there to receive them immediately up to the entrance of the new hive, and from that moment entered them as regularly as if they had never known any other; not one, that I recollect, attempting to fly up to the old hive as before. This was another conclusive evidence to me, that bees will not *fly* any distance in the dark, although they will travel some feet on a smooth surface after alighting, to their habitation.

Here, however, I wish to make a passing remark. It is better always to have the entrances to the hives as close as may be to the lighting places; and if a dark room or garret be used as a bee-house, let the hive or swarm be not to exceed eighteen inches or two feet from the outer entrance, and *a smooth board always placed from the outer entrance to the hive itself.* My reason for it is, that the bee, on returning to the hive, is generally loaded and fatigued, and every facility given to its labours by cutting short its travel, renders the task easier. It is certainly impossible for bees to do so much labour if the passage to their hive be difficult, as if it were otherwise. This is known from actual observation.

As the bottom board of my new hive is hung with hinges on the back side, and held up by hooks and staples on the front, where it projected about four inches, to allow sufficient room for the bees to light upon, I could, as often as necessary, inspect the labours of the hive by letting it down and looking at them. They forthwith commenced building comb in the new hive, and in a very short time had covered the whole upper region of the hive, and down below the cross sticks for supporting the comb, filling considerably more than half the hive with it. After four or five weeks, the amount of comb did not materially increase; but the bees still laboured, and carried in honey and bee-bread while the season lasted. No attempts has been made to swarm. The drones made their appearance in large numbers at the usual time, and disappeared in September. In the early part of October, finding the new hive quite heavy, I concluded to take off the old one, and transfer the bees all to the other. Accordingly, after dark, I lifted off the old one quickly, while my man, who assisted me, immediately laid a cover over the holes through the top of the new one, to prevent the escape of the bees that were in it. I then turned the one I had taken off upside down, and

set it on the floor, expecting next morning to see the bees all leave it, for the one that remained, and left them for the night.

Next morning, although clear and sunny, it was not very warm; and I found the old hive very full of bees, and clustered at the top of the comb, as it now stood *inverted* on the floor. They appeared listless and idle, while the occupants of the new one were busy as usual at their labours, seeming not at all to notice the removal of their fellows. To rid the old hive of its tenants, was now my object; so I turned it down on one side, and placed it near the entrance to the other, and rapped hard on it; but they took no notice of it, only a continual buzzing and piling closer together. I then, with an augur, bored an inch hole through the top board, and puffed in large quantities of tobacco smoke to drive them out. But this did no good. They still buzzed and clustered closer together. The only effect that I observed was to make them drunk or stupid. I then took the axe and went to work in good earnest. I pried off the top board, which I did as carefully as I could; but not without breaking some of the comb. Still I found I could not take it out without great loss and trouble. I then deliberately, with the axe, pried and split the hive apart, as it was of no value; so that the whole contents lay open in broad compact masses before me. The bees did not offer to sting or disturb me; and the only vigorous movements that I could perceive, were a regular and systematic effort of the bees, in the other hive, to plunder the old ones, and carry away all the honey they could. I presume the plan of operation was fully agreed upon, as the bees from the old hive immediately joined the others as they were disengaged from the comb. I now took up a piece at a time of the comb, which, although old and black, was tolerably filled with honey, and with a wing brushed off the bees on to the entrance board to the new hive. This, as the comb was in some instances broken, and the honey dropping out, was rather a sticky job; and many of the bees were perfectly enveloped in it, and fell in large connected bunches on the board. This, however, was no disadvantage to them. The others quickly relieved them of all the honey, who, as soon as they were dry, immediately went to work also. The process of taking out the comb and brushing off the bees, took me upwards of half an hour, and I accomplished it with the loss of but very few, perhaps not to exceed a hundred in all. A good deal of honey was dropped on the floor, but the bees took it up perfectly clean, and deposited it in their hive. The amount of bees that I took out of the old hive was five or six quarts, and from appearances, I should judge, there were as many in the new one. There are now, probably, at least what are equal to two full swarms, and they appear as brisk as any bees I have ever seen, and as likely to live well through the winter.

Among the old comb which I took out, I saw no bee-bread at all. There were some empty breeding cells, and a few young bees in one piece of comb only. As I observed the bees carrying considerable quantities of bread, both before and after taking up the old hive, I inferred that it was deposited in the low one, as I am informed by experienced bee-keepers that they do not deposit bread in any but the lower hive, where more than one is inhabited.

As this hive will now hold what may be equal to three swarms, I can obtain a large quantity of honey from it next season; and if they become too numerous, I must place a larger box under this and remove them into it. As I have holes in the top, through which they can pass, I can place a vacant box over it to receive their surplus honey.

(To be continued.)

Art. XXVI.—*On Manures.*

[from the genesee farmer.]

In our estimation, the importance of manure is such that we again allude to the subject, and would most particularly impress upon the mind of every cultivator, that manure is the grand moving power in the production of an abundant return, and according to its richness, its being in a proper state when applied, and the quantity given, the success of the agriculturist will in a great measure depend. This is a subject which, at this season, ought never to be lost sight of; for now the farmer can with propriety spare a portion of his time in collecting and properly preparing the manures that could not conveniently be done at seasons when operations must be performed which would admit of no delay.

The proper places for preserving and fermenting manures, and the proper state for applying it to the soil, are circumstances which deserve the attention of every farmer, and on the practices in general pursued, there is very considerable room for improvement, for on the state in which it is when incorporated with the soil much of the benefit derived from it will depend. It is not our intention at present to enter into the superior qualities of any particular species of manure, as the great mass of manures collected by the farmer is a mixture of animal

and vegetable matters, generally consisting of the excrementitious matter of horses, cattle, swine and poultry, mixed with straw and other sorts of litter. But the properties of the various sorts of manures applied to the soil, should be studied by every cultivator; for as different manures contain different proportions of the elements necessary to vegetation, so they require a different treatment to enable them to produce their full effects in culture: for instance, all green succulent plants which contain saccharine or mucilaginous matter, and consequently very readily ferment, should be applied immediately after their death, which will prevent their too rapidly fermenting by compression and exclusion of air; while on the other hand, manures obtained from the farm or stable yards, require at least a slight incipient fermentation previous to its application, for putrefaction is evidently the means of rendering these substances available to plants; but if too much decomposition has taken place, although it may be attended with more immediate benefit, still the loss sustained by the manure, if the decomposition has been allowed to proceed until the matter has become a saponaceous mass, must be very great; much must have been lost in the state of gases, and all that is left are a few earthly, saline, and carbonaceous particles of comparatively little value—the fibrous texture of the vegetable matter is entirely broken down—the manure has become perfectly cold, and all the carbonic acid and ammonia are disengaged, which, had they been applied and retained by the moisture of the soil, would have afforded a very great degree of nourishment to the crops, and been particularly useful and advantageous during the germination of the seed and the first stages of the growth of the plants. The manner of preserving dung, therefore,—the proper situation in which it ought to be kept, and the proper stage of decomposition at which it ought to be applied to the soil, are circumstances of the utmost importance.

As respects a proper place for keeping manures, there is a considerable difference of opinion among farmers. Some prefer keeping it under cover, some close to walls, on the north side, while others in an open yard, or take it direct to the field on which it is ultimately to be applied, and there laid up in one mass, and turned over once or twice to accelerate its fermentation. Our respected correspondent, Judge Buel, has, in a former number of the "Genesee Farmer," given a description of a shed for manure, recently erected by Dr. Hosack on his farm at Hyde Park, Dutchess co., and which the Judge speaks of in terms of admiration. A few weeks ago we paid a visit to Hyde Park, and examined the shed. It has a very neat appearance, but on making some inquiries of the gentleman who superintends the Doctor's farm respecting its advantages and disadvantages, he decidedly condemned it, as being by no means

calculated for properly keeping manures. Moisture being a principal agent in all processes of decomposition, renders a certain quantity of rain, &c. as necessary as air for accomplishing the proper degree of fermentation.

When it is intended, therefore, to form a proper and efficient dung-yard, or dung-yard and pit, it should, according to Loudon's Agriculture, be placed, in almost every case, in the centre of the main yard, with a pavement or cause-way carried round the yard, next to the houses or buildings, of about nine or fifteen feet in width, according to the scale of the whole; the remaining part of the yard should be enclosed with a wall, or may remain quite open. From this space the earth should be excavated so as to form a hollow, deepest at the centre: and from the lowest part of this hollow should be conducted a drain to a reservoir for liquid manure. The bottom of this excavation ought to be rendered hard to resist the impression of cart wheels, and make it impervious to moisture to prevent absorption. This in our opinion, is as eligible a situation for every purpose as probably can be adopted; it will only be necessary to have some drains to carry off the rain water, and prevent a superfluity from mixing with the dung and diluting its drainings, which should invariably be thrown back on the manure heap as it drains off. The proper state in which manure ought to be decomposed when applied to the soil, has long been a matter of dispute. We admit animal matters and dungs highly putrescent are powerfully, but transiently beneficial; from this cause gardeners prefer thoroughly decayed stable manure; but the opinions of our first rate chimists are decidedly at variance with this practice, and the farmer should remember that the properties of manures most essential to the growth of plants are carbonic acid and ammonia, and that the more the manures are decomposed, the greater portion of those gases have escaped, and the enriching qualities of the dung very much exhausted.

Particluar attention should be paid to the rapidity of decomposition which takes place in the manure heap, and this must be regulated according to the period when the material may be wanted for use, by turning frequently for accelerating fermentation, and by spreading it about for retarding. As respects the test of its fitness for use, a good criterion is when it has got to that degree of tenderness that the littery parts will easily separate when a dung fork is inserted in the heap, and a fork full taken up. †

Art. XXVII.—*Culture of Corn.*

[FROM THE NEW-ENGLAND FARMER.]

We are happy in the reception of the following valuable communication. As it relates to improvements in cultivating one of the most useful products which ever rewarded the skill and industry of the husbandman, we hope that the example of our correspondent will induce other practical and intelligent cultivators to state their methods of obtaining crops of the "prince of vegetables," worthy of being recorded in the annals of improved husbandry.

"Princeton, (N. J.) Jan. 28, 1833.

Mr. Editor,—The idea has often occurred to me, while perusing your valuable paper, that farmers might be mutually benefited by making public through its columns their mode of cultivating the various crops which they grow upon their farms. Under that impression I have taken up my pen with the intention of devoting an evening in giving you my views and practice in cultivating a crop of Indian corn. Our soil, principally a sandy loam, in some places inclining a little to gravel with clay subsoil, is well adapted to the growth of that plant, and we consider it the most profitable crop we cultivate. In the first place we prefer a stiff herds-grass sward, (by you called red-top, or herd-grass,) and clover; and experience has taught us that a field which has been pastured for two or three years is much more certain of producing a good crop of corn than one of the same quality which has been kept up and mowed for hay the same length of time, that it is so with us does not admit of a doubt. We suppose it is owing in part to there being fewer insects in the pasture-land—the droppings of the cattle adding more recent animal manure to the soil, and some suppose that the soil having been rendered more compact by the cattle trampling on it for two or three successive years facilitates the growth of the young plant by enabling it to push forth its roots more readily, as a certain degree of compactness in the soil appears to be necessary to enable a young plant to send forth its roots with facility. After trying various modes of preparing my land and tending the crop, I have for the last two or three years adopted the following, which appears to me to be the best I have yet practised.

I plough my land in the spring as early as convenient, regulating the depth by the depth of the soil, after ploughing put on a roller drawn by one yoke of oxen and roll lengthwise the furrow, after rolling, harrow twice along the furrow, with a heavy harrow six feet wide with iron teeth well sharpened, drawn by two able horses. Then take a small plough, drawn either by

one or two horses and form the field in ridges by throwing two furrows together 4½ feet distant from each other across the original furrows, being careful the plough does not reach the sward to turn it up; this cannot be *well done* without the ground has been previously rolled. I then furrow crosswise the ridges last formed, with a sled made for the purpose of two inch plank with three runners, each runner having a hole an inch in diameter bored in the bottom about equidistant from either end, and a peg of good hard wood driven therein to extend about one and one-half inches below the runner, the part extending below the runner to be twice the diameter of that inserted in it. With this machine, with a tongue or pole firmly attached to the middle runner, one man with two horses can with ease furrow more than twenty acres per day; as he makes three furrows at once, he must, consequently, furrow as fast as three men with ploughs, and it leaves the furrow in a fine state to drop the corn on, the grain not being so liable to scatter and roll as when dropped on the hard furrow made by a plough. The ground is then prepared for planting squares 4½ feet by 4 feet, and at this distance we put four grains or kernels in each hill. We find a small quantity of ashes on or in the hill of considerable advantage; it causes the young plant to come up strong and vigorous. When the corn has been up a few days, we put a small quantity of plaster to each hill, and commence harrowing with a small harrow 3½ feet wide, drawn by one horse, twice through each row one way, which prepares the ground handsomely for ploughing, and by which a careful hand can loosen the soil close to each hill. In a very few days after the harrowing is completed we commence ploughing by throwing a furrow from each row, ploughing as close to the corn as can be done without covering it up, leaving the middle or spaces between the furrows in that direction untouched, we then commence ploughing crosswise throwing the furrow to the corn unless it should be quite grassy, when we throw it from the corn as before, and in either case plough the middle or spaces left between the rows in the direction last ploughed out immediately, throwing half to each row. After laying in this state some days, we put on the small harrows again and harrow twice through each row, or rather space between the rows one way—in this state it may be left for some days untouched, unless there should be a heavy fall of rain, in which case experience has taught me that it is of decided advantage to the corn to stir the ground again with the harrow, that a free communication may be kept up between the soil and the atmosphere. As it is all important to the health of an individual that the pores of the skin should be kept open, so it appears to me with the soil, that the slight crust formed upon its surface after a rain, should be again broken with the harrow or some other implement.

When the ears are beginning to set I commence ploughing for the last time, throwing the furrows to the corn and leaving the spaces between the rows well ploughed out; by this system you will perceive the hoe is in a great measure dispensed with, and I can assure you I can keep my field as clean without it as you would wish to keep your garden, unless the spring should be very wet and warm when we occasionally find it necessary to use the hoe. One man and a horse will plough around (as we call it) five acres of corn in a day, or complete, by ploughing the middle out, 2½ acres. If there should be a considerable fall of rain or heavy showers soon after the last ploughing, I almost invariably put on my small harrows again, unless the crop should be too forward, but at the last harrowing we raise the corner teeth of the harrow (which is of a triangular form) so that near the hills they merely break the surface. When the corn is nearly ripe and, if possible, before it is killed by the frost, we cut it up by the ground and set it in stalks to be husked at leisure, the stalks are hauled and stacked at the barn-yard to be food through the winter months.

I have said nothing on the subject of applying manure to the crop, having already extended this communication to a much greater length than I intended when I commenced, and I fear it will occupy more space in your columns than it merits, but I leave it with you to publish the whole or any part thereof that you may consider calculated to promote the cause of Agriculture.

A. C.

Art. XXVIII.—*Pruning of Vines.*

[FROM THE GENESEE FARMER.]

In my recent tour, I found many individuals have made great progress in the cultivation of the grape vine, and in several places I visited, with considerable success; but there is one point in the arrangement of the vine, on a due attention to which much of the result must depend, and which I have seen in a great measure, is totally neglected, indifferently attended to, or performed in a manner more injurious than if solely left to nature. I allude to the *summer pruning* of the vine. It is a very errone-

ous idea to imagine that a spring pruning is all that is necessary for the grape vine. It is during the period of growth in summer, that the future tree must be formed, and a good crop for the following season secured; consequently a considerable degree of pre-arrangement and forethought must be put in requisition, during the early growths of summer. It is in the summer the judicious pruner must premeditate how he shall prune, and where he shall cut in the following spring; nothing can be more effectually in his power, as respects fruit trees, than this with the vine, on account of its rapid growth and docility. All that is required is frequent examinations of the vines, as they make their young wood, and regularly divesting of all extraneous parts, as soon as they have made their appearance. To enable the uninitiated operator to decide what are *extraneous parts*, the following hints may be of service. After the first growths are made and shown all their fruit for that season, a due proportion of shoots must be selected for the production of a crop next season, and for the regular formation of the future tree. These are to be allowed to remain until they have elongated to the necessary length, which existing circumstances and the judgment of the operator only can determine. Having made these selections, all the others that have no bunches on them are to be rubbed off with the finger and thumb, (never applying a knife for summer pruning, as when that instrument would be requisite it is a convincing proof that the operation has been too long deferred.) Those shoots bearing fruit are to be pinched off, or *shortened back*, as gardeners term it, within one joint of the cluster nearest to the point of the shoot; and having thus properly regulated the vine every future lateral is to be detached as long as they make their appearance during the remainder of the season, by which means the vine will be divested of gross incumbrances, and a beneficial portion of light, and a free circulation of air will be admitted among the young wood, and the whole strength of the tree concentrated in its proper channel, thereby producing strong fruitful shoots for the following season, and adding greatly to the size of that present crop.

I now offer a few remarks on a mode of summer pruning which I consider highly detrimental; namely: divesting the vine of shoots and *leaves* at perfect random; thus injuring the vine for future crops, and very materially injuring the existing one. *All* the leaves must be allowed to remain on the shoots selected. It requires but a very superficial acquaintance with the principles of vegetable physiology to convince us of the impropriety attendant on divesting those parts of the vegetable structure, which have functions to perform, of the members by which those functions are to be accomplished; and it is a generally admitted fact, that the process of elaborating the sap is chiefly operated in

the leaf—the leaf is therefore absolutely essential for maturing the fruit of the present season, as also for perfecting the bud from which the bearing branches of the following season are to emanate. The late Sir Humphey Davy justly remarks, "The production of the other parts of the plant takes place at the time the leaves are most vigorously performing their functions;" consequently, by depriving the tree of this most essential organ, its immediate death, or, at all events, its slow destruction, must inevitably ensue. Respectfully,

ALEXANDER GORDON.

ART. XXIX—*Preserving Plants from Insects.*

[COMMUNICATED FOR THE COLUMBIA TELESCOPE.]

Tavistock, (Devon.) Aug. 11, 1770.

SIR—I should not presume to trouble you, as a member of the Royal Society, with the following letter, did not the subject seem to promise to be of great public utility. It relates to the effects of elder:—

1st. In preserving cabbage plants from being eaten or damaged by caterpillars.

2d. In preventing blights, and their effects on fruit and other trees.

3d. In the preserving of crops of wheat from the yellows, and other destructive insects.

4th. On the saving crops of turnips from the fly, &c. &c.

1st. I was led to my first experiments, by considering how disagreeable and offensive to our olfactory nerves the effluvia emitted by a bush of green elder-leaves are, and from thence reasoning how much more so they must be to those of a butterfly, whom I considered as being as much superior to us in delicacy, as inferior in size.

Accordingly, I took some twigs of young elder, and with them whipt the cabbage plants well, but so gently as not to hurt them, just as the butterflies first appeared; from which time, for this two summers, though the butterflies would hover and flutter around them like gnomes and sylphs, yet I could never see one

pitch, nor was there, I believe, a single caterpillar blown, after the plants were so whipt, though an adjoining bed was infested as usual.

2d. Reflecting on the effects above mentioned, and considering blights as chiefly and generally occasioned by small flies, and minute insects, whose organs are proportionably finer than the former, I whipt the limbs of a wall-plumb tree, as high as I could reach: the leaves of which were preserved green, flourishing, and unhurt, whilst those not six inches higher, and from thence upwards, were blighted, shrivelled up, and full of worms; some of the last I afterwards restored by whipping with and tying up, elder among them. It must be noted, that the tree was in full blossom at the time of whipping, which was much too late, as it should have been done once or twice before the blossom appeared. But I conclude, from the whole, that if an infusion of elder was made in a tub of water, so that the water might be strongly impregnated therewith, and then sprinkled over the tree, by a hand engine, once every week or fortnight, it would effectually answer every purpose that could be wished, without any possible risk of hurting the blossoms.

3d. What farmers call the yellows in wheat, and which they consider as a kind of mildew, is in fact, as I have no doubt but you well know, occasioned by a small yellow fly, with blue wings, about the size of a gnat. This blows in the year of the corn, and produces the worm, almost invisible to the naked eye; but being seen through a pocket microscope, it appears a large yellow maggot, of the colour and gloss of amber, and is so prolific, that I last week distinctly counted forty-one living yellow maggots or insects, in the husk of one single grain of wheat, a number sufficient to eat up and destroy the corn in a whole ear. I intended to have tried the following experiment sooner, but the dry hot weather bringing on the corn faster than was expected, it was got, and getting into fine blossom, ere I had an opportunity of ordering as I did; but however, the next morning at day break, two servants took two bushes of elder, and went one on each side of the ridge from end to end, and so back again, drawing the elder over the ears of corn of such fields as were not too far advanced in blossom.

I conceived, that the disagreeable effluvia of the elder, would effectually prevent those flies from pitching their tents in so noxious a situation; nor was I disappointed; for I am firmly persuaded, that no flies pitched or blowed on the corn after it had been so struck. But I had the mortification of observing the flies the evening before it was struck, already on the corn, six, seven, or eight, on a single ear, so that what damage hath occurred, was done before the operation took place: for, on examining it last week, I found the corn which had been struck,

pretty free of the yellows, very much more so than what was not struck

I have therefore no doubt, but that, had the operation been performed sooner, the corn would have remained totally clean and untouched. If so, simple as the process is, I flatter myself it bids fair to preserve fine crops of corn from destruction, as the small insects are the crops greatest enemy.

4th. Crops of turnips are frequently destroyed, when young, by being bitten by some insects, either flies or fleas. This I flatter myself may be effectually prevented, by having an elder bush spread so as to cover about the breadth of a ridge, and drawn once forward and backward, by a man over the young turnips. I am confirmed in this idea, by having struck an elder bush over a bed of young cauliflower plants which had begun to be bitter, and would otherwise have been destroyed by those insects; but after that operation it remained untouched.

In support of my opinion, I beg leave to mention the following fact from very credible information:—that about eight or nine years ago, this country was so infested with cock-chaffers, or oak webs, that in many places they eat every green thing but elder; nor left a green leaf untouched, besides elder bushes which remained green and unhurt, amid the general devastation of so voracious a multitude.

On reflecting on these several circumstances, a thought suggested itself to me, whether the elder, now esteemed noxious and offensive, may not be one day seen planted with, and entwining its branches among fruit trees, in order to preserve the fruit from destruction by insects; and whether the same means which produce these several effects, may not be extended to a great variety of other cases, in the preservation of the vegetable kingdom.

The dwarf elder (*ebulus*,) I apprehend, emits more offensive effluvia, than common elder, therefore must be preferable to it in the several experiments. CHARLES GALLETTE.

To MATTHEW MATY, Secretary R. S.

PART III.

MISCELLANEOUS INTELLIGENCE

Rice Machine.—We mentioned a few weeks since, says the Northampton, (Mass) Courier, the invention of a machine for cleaning rice from the hull, by some ingenious mechanics of this town. At that time the trial of its capacities had hardly been tested fairly, as it was not perfected in all its parts nor its exact powers graduated. Within a few days, however, a machine has been completed, and all the improvements which experience had suggested been done, and a trial of its powers made in the presence of a large number of our citizens. It performed its task to the admiration of all, and goes by horse, steam, water, or any other power. It works rapidly, cleans the rice in the best possible manner, without, as has been the leading difficulty with all other machines, breaking up the grain. The Patent Office at Washington contains a number of inventions for this purpose, and the premium of $50,000 has often been claimed, but they all upon experiment, fail of accomplishing the great object successfully. Gentlemen who are familiar with the cultivation of rice, think this machine cannot be otherwise than successful, conferring a benefit upon rice plantations almost incalculable.—*Amer. Far.*

The Butter Tree.—This tree, which the Landers found abundant in the interior of Africa, yields a very savory and nutritious kind of vegetable marrow. The tree is said to resemble the oak. The nut is enveloped in an agreeably pulpy substance, and the kernel is about as large as our chesnut. This is exposed in the sun to dry; after which it is pounded very fine and boiled; the oily particles float, and when cool they are skimmed off and made into little cakes fit for immediate use.—*Ibid.*

Cautions and Directions in Gardening.—Gardening—The *management* of a garden (summarily speaking) consists in *attention* and *application;* the first should be of that wary and provident kind, as not only to dwell in the present) but for the future; and the latter should be of that diligent nature as (willingly "*never to defer that till to-morrow which may be done to-day.*" Procrastination is of serious consequence to *gardening;* and neglect of times and seasons will be fruitful of disappointment and complaint. It will often happen, indeed, that a gardener cannot do what he *would;* but if he does not do what he *can,* he will be most justly blamed, and perhaps censured by none more than by himself.

Weeding.—Weeding in time is a material thing in culture, and *stirring* the ground about plants, as also *earthing up* where necessary, must be attended to. Breaking the surface will keep the soil in health; for when it lies in a hard or bound state, enriching showers run off, and the salubrious air cannot enter. Weeds exhaust the strength of the ground, and if they are suffered to seed and sow themselves, may be truly called (as Mr. Evelyn speaks) *garden sins.* The *hand* and *hoe* are the instruments for the purpose. *Digging* where the spade can go, between the rows of plants, is a good method of destroying weeds; and as it cuts off the straggling fibres of roots, they strike fresh in numerous new shoots, and are thus strengthened. Deep *hoeing* is a good practice, as it gives a degree of fertility to the earth.—*Marshall's Gardening.*

Ginger for Heaves in Horses.—As a farrier is embraced in this work, I may add, that my old horse, who is now in his 20th year, has been cured of the disease called "heaves," by the use of ground ginger, a remedy recommended to me for the purpose. A table-spoonful was given to him daily, for several weeks, mixed in his mess of Indian meal and cut straw. The horse has been troubled with weezing and a hard cough for a year or two, and had lost flesh so much that he seemed to have nearly finished his term of service. Since the use of the powdered ginger he has become quite fat, and appears to be years younger and in good spirits. T. C.—*N. E. Far.*

To Cure Wounds on Horses and Cattle.—As there are many useful receipts hidden from the public for the sake of speculation in a small way, by many who would be thought something of in the world, I am induced to lay before the public a receipt for making the *King of Oil*, so called, which perhaps excels any other for the cure of wounds on horses or cattle, and which has long been kept by a few only in the dark. Feeling a desire to contribute to the good of the public, but more especially to the Farmers of Genesee, I send you the following very valuable receipt for publication:—1 ounce of green copperas, 2 ounces of white vitriol, 2 ounces of common salt, 2 ounces of linseed oil, 8 ounces of West-India molasses. Boil over a slow fire fifteen minutes in a pint of urine; when almost cold, add one ounce of oil of vitriol, and four ounces of spirits of turpentine. Apply it to the wound with a quill or feather, which will immediately set the sore to running, and perform a perfect cure.

Yours, respectfully, STEPHEN PALMER.—*Gen. Far.*

The Palm Tree.—This tree seems particularly intended by Providence for the uncivilized and destitute savage. It affords him a pleasant drink, and, indeed, the common and favourite drink, especially along the coast of Africa. The wine, as the juice is called, is obtained precisely as the juice of the maple is in America for a different purpose; a hole is bored in the trunk of a tree, a spout made of a leaf inserted, and through this the liquor flows into a calabash beneath, which, holding two or three gallons, will probably be filled during the day. It soon assumes a milky appearance, and is generally used in that state; if kept longer, it acquires rather a bitter flavor. The palm tree also afford a valuable oil, of which immense quantities have been heretofore taken off by foreigners, particularly by Liverpool traders. The palm wood is an excellent material in building the simple dwellings of the natives.—*Ibid.*

To Prevent Botts.—Soon after the bott-fly commences depositing its eggs on the horse, take water a little more than blood warm, and with a linen or cotton cloth wash those parts of the horse where the eggs are deposited, moving the hand gently other them, and repeat the washing as often as once a week, till the fly disappears, and your horse will not be troubled with botts. This gentleman further says, that by the above experiment any man may be convinced that this recipe is a preventative of botts in horses; and we see no reason why it may not be effectual, as by this means the grub is hatched out, and immediately perishes for want of that warmth and nourishment provided for it by nature in the stomach of the horse.—*Amer. Far.*

Raising Calves by Hand.—Mr. Editor—Having found you very desirous of communications connected with agricultural concerns, I have thought proper to recite to you my method of *raising calves by hand*, and thereby not only enlarging the *dairy product*, but actually rearing a finer animal and in less time. At one day old, the calf is removed entirely from the dam, and fed at first with milk fresh from the cow, and in a pail in which the feeder may lay his hand, putting a finger in the calf's mouth by which the little animal will soon drain the pail. By a little care and ingenuity in the feeder, the calf will presently either drink the milk, or thrusting its nose to the bottom of the pail, suck up the contents of every drop. Having taught the creature to take its food in this artificial manner, proceed to add to portions of thin corn meal mush as much *skimmed milk* as will reduce the mush to a proper consistency for suction, and

render the mixture a full feed for the calf. Feed thus three times a-day. Any child eight years will take interest in ministering to the little beast, and be fully competent to discharge the office of feeder for a number of calves.

Should the diet ever disagree with the calf, substitute fresh milk a time or two, and all will be well again. *Probattum est.*

Yours, respectfully, GEO. P. COOPER.

Tarversville, Feb. 12, 1833.—*Sou. Planter.*

Racks for Sheep.—The best constructed rack for feeding sheep, is a rack and trough combined, constructed in the following manner: A trough is made in a piece of timber, four inches deep, and as wide as the timber will allow. The sides are hewed beveling, so that when pieces of board are nailed upon them in an upright position, they may stand flaring. Pieces of board, two feet and a half long, and six inches wide, are nailed on the sides in an upright position, leaving the spaces between them six or seven inches. The tops are strengthened by narrow strips of board, laid horizontally, in the form of raves. Each end is boarded up to prevent the sheep from getting in. To prevent its being turned over, it must be made fast to short pieces of timber laid underneath crosswise. The object of using boards instead of rounds, is to prevent the horned sheep from getting fast, and to make the open spaces farther apart, so that the sheep may not stand crowded. It may be thought that six or seven inches is a narrow space for a horned sheep to put in his head; but experience will prove, that even "the indignant ram," with his "twisted horns," will soon learn to put in his head and take it out at pleasure. The great benefit of a rack and trough constructed in the above manner, is, it affords a convenient and clean place for feeding green vegetables and corn. At that season of the year when sheep need the most care, every place which they frequent is soon rendered too foul for use; but a trough so constructed cannot be fouled by the sheep. P.—*Gen. Far.*

Chickens in Gardens.—There are many plants, more particularly among the *Cruciferæ* (turnip, stock gilliflower, &c.) which I should be discouraged from cultivating in my garden without the assistance of chickens in destroying the insects. This is the third season that I have employed them for this purpose. I discharged the hen from her prison as soon the chickens are large enough to stay comfortably by themselves through the night; for they learn to take care of themselves during the day, within a short period after their introduction. When of the size of a quail, they commonly become troublesome by meddling with matters not committed to their charge more especially by scratching; and then we expel them. As one brood after another is brought into the garden, we have always a supply of these busy creatures, during the season.

Some weeks ago I was on the point of turning out a brood, when in consequence of mowing an adjoining meadow, the grass hoppers came into the garden in overwhelming numbers: and I foresaw that unless these insects could be quickly dispossessed, great damage must ensue. I immediately changed my purpose. Instead of expeling the inmates, a few large chickens from the outside were admitted, and the activity of the whole corps was brought into full play. The grass hoppers were chased and destroyed in every direction; and in a short time the whole colony disappeared. We have since removed those chickens, leaving a brood of smaller size to guard the premises against stragglers.

I have written this in consequence of the last communication of Ulmas. Grass hoppers are also very plenty in this quarter, and on some gardens their depredations have been serious; but the drought at Buffalo must have been severer than with us. We have not suffered on that account within the last month or six weeks: the rains without flooding have been abundant, and the pastures are fresh and green. D. T.

Greatfield, Cayuga Co., 9 *mo.* 7, 1832.

Erratum.—The paging of this Number, should commence with p. 169.